

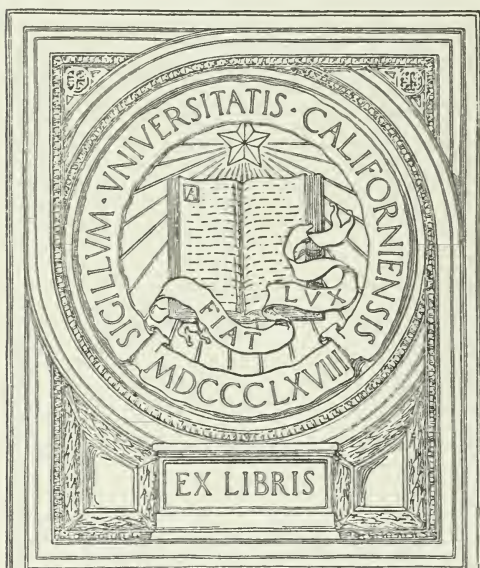
# HEALTH EDUCATION

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A PROGRAM FOR PUBLIC SCHOOLS  
AND  
TEACHER TRAINING INSTITUTIONS



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# HEALTH EDUCATION

A Program for Public Schools  
and  
Teacher Training Institutions

*Gilbert C. Neaman*

Report of the  
Joint Committee on Health Problems in Education  
of the  
National Education Association  
and the  
American Medical Association

with the coöperation of the  
Technical Committee of Twenty-seven

(Fifth Printing—October, 1926)

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Prepared under the direction of  
Thomas D. Wood, M.D., Chairman  
525 West 120th Street  
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## FOREWORD

At the annual meeting of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association on February 28, 1922, in Chicago, unanimous support was given to a resolution that plans should be made for the preparation of a program of health education for public schools and teacher training institutions of the country.

At a second meeting of the Committee in April, 1922, the plan was developed, which has since been carried out, for the appointment and organization of a Technical Committee of Specialists, the function of which would be to initiate and formulate a tentative draft of the report and to submit it to the Joint Committee, which would then act as a reviewing committee before submitting the report to the National Education Association.

Accordingly, a Technical Committee of twenty-seven specialists was appointed and this committee has prepared most of the material for the report.

All who may benefit by this report are indebted to the members of this Technical Committee who have so generously given time and professional service in the preparation of valuable and constructive contributions to this report.

The purely technical material in this report was first prepared by the sub-committees in the various fields and was then sent to the whole committee for approval and criticism. Material was criticised from two standpoints (1) its accuracy and appropriateness from the technical point of view of authorities in the respective technical fields; and (2) its educational soundness and appropriateness for the respective age groups. After the material had been revised and approved by the Technical Committee, it was submitted to the Joint Committee which passed upon it at an editorial meeting in Chicago, in April, 1924.

During the preparation of the report, over seven hundred requests for health education materials were sent to state, city and county superintendents, and to teacher training institutions. About one hundred and fifty responses were received from school systems conducting health education programs, and from them a large amount of very helpful material was collected. The Committee acknowledges its indebtedness to all those who so generously contributed to the preparation of this report.

The Committee wishes to thank the following persons for their generous contributions of time and material: Dr. Edna W. Bailey, University High School, Oakland, California; Professor M. A. Bigelow, Director, School of Practical Arts, Teachers College, Co-

lumbia University; Professor Jean Broadhurst, Teachers College, Columbia University; Miss Marie Fowler, Supervisor Early Elementary Department, Kalamazoo Public Schools; Mr. Charles W. Finley, The Lincoln School Teachers College, Columbia University; Miss Florence Hughes; Professor George Hunter, Knox College; Professor Jessie Phelps, Michigan State Normal College; Professor S. R. Powers, Teachers College, Columbia University; Miss Erma Proctor, Director of Health Education, Child Health Demonstration, Athens, Georgia; Miss Sue Rowan; Dr. Emily Seaman, Staff Associate, American Child Health Association; Miss Caroline Stackpole, Teachers College, Columbia University; Miss Cora Stoddard, Scientific Temperance Federation; Professor William Vinal, Rhode Island College of Education; Dr. Abraham Zingher, Associate Director, Bureau of Laboratories, Department of Health, New York City.

Grateful recognition is here given to the highly competent expert assistance of Miss Marion Lerrigo to the Chairman of the Joint Committee in directing the preparation of the report.

During the last ten years there has occurred a great wave of intense interest in, and intensive development of, health work in the schools which has been accompanied by unprecedented stimulation of interest in health by organizations outside of the schools, and the contribution to the schools from many outside sources of a fascinating and confusing mass of materials, ideas and devices for health teaching. This has made it desirable and necessary that the educational forces within the schools should study, interpret and co-ordinate the aims, materials and methods in the field of health education so that the schools of the country may be provided with an educationally sound program of health teaching. To do this completely would require years of thorough investigation and experimentation of a kind which it has not yet been possible to carry on. However, until such investigation may be undertaken, it is hoped that this report may provide the best available guidance to the schools of the country relative to health teaching in the immediate future.

It is not the purpose of this report to provide a single-minded, unified statement regarding health education; the aim is rather to supply an authoritative compilation of technical statements and a consensus of professional opinions relative to this field of education.

It is hoped that information and suggestions resulting from practical experience in health education, particularly if based upon the use of this report, may be sent to the Chairman of the Committee.

THOMAS D. WOOD, *Chairman.*



## INTRODUCTION

### THE AIMS OF HEALTH EDUCATION

The aims of health education may be briefly stated as follows:

1. To instruct children and youth so that they may conserve and improve their own health.
2. To establish in them the habits and principles of living which throughout their school life, and in later years, will assure that abundant vigor and vitality which provide the basis for the greatest possible happiness and service in personal, family and community life.
3. To influence parents and other adults, through the health education program for children, to better habits and attitudes, so that the school may become an effective agency for the promotion of the social aspects of health education in the family and community as well as in the school itself.
4. To improve the individual and community life of the future; to insure a better second generation, and a still better third generation; a healthier and fitter nation and race.



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\* Deceased.

## I.

### THE PROBLEM

#### HEALTH CONDITIONS IN THE UNITED STATES

In the midst of a nation-wide enthusiasm for health education, the demand comes for a wider understanding among educators of the problems of the health of our nation and the exact contribution which our public schools may make to the preservation and improvement of the national health.

Health education is concerned with positive constructive health building. It does not primarily deal with disease. But in order that the teacher may clearly understand the importance of health as a social and national problem and appreciate the significance of neglect of health, statistics are presented in this chapter which summarize the problems of disease and death which exist in this country.

Any program of health education should be based upon actual needs as shown by incontrovertible facts rather than upon general theories. There are, moreover, certain national aspects of the health problem which must be understood in order to give perspective and background to the interpretation of the needs of any particular community. A few of the salient facts that throw into relief the recent trend and the present status of public health, and especially child health in this country, as reflected in mortality and morbidity statistics will be enumerated in the following pages. It is upon such statistics that we must largely depend at the present time for judging how near or how far we are from the goal of the public health movement which aims to prolong life by preventing unnecessary sickness and death and at the same time make possible a healthier, happier people.

#### The Health Span

A child born today has an expectation of about 55 years of life. After passing the first few years when the hazards are great the average child who has reached his fifth birthday has a chance of living to be 62 years old.

It is important that health education should contribute to the lengthening of life and the improvement of its quality by every means which may increase the happiness, efficiency and helpfulness of human beings.

#### Major Causes of Death

Of every 1,000 people of all ages living today, twelve will die before the year is out. Let us see what it is that shortens life. The ten

leading causes of death in the United States Registration Area in 1922 were as follows:

### Principal Causes of Death

*U. S. Registration Area, 1922*

<i>Rank</i>	<i>Cause</i>	<i>Percentage of Total Deaths</i>
1.	Diseases of the Heart.....	14.0
2.	Influenza and Pneumonia (all forms).....	11.3
3.	Tuberculosis (all forms).....	8.2
4.	Nephritis .....	7.5
5.	Cancer and other Malignant Tumors.....	7.3
6.	Cerebral Hemorrhage and Softening of the Brain.....	7.3
7.	Congenital Malformations and Diseases of Early Infancy..	6.6
8.	Violence (excluding Suicide and Homicide).....	5.9
9.	Diarrhea and Enteritis.....	3.3
10.	Arterial Diseases .....	1.9
	All Others .....	26.7

If these deaths occurred late in life there would be less reason for us to combat them with vigor, but as a matter of fact some of these causes reach down into the earlier, productive years of life for their victims.

The last two items in the table occur almost wholly among babies. One sixth of pneumonia is among very young children.

Of the deaths from tuberculosis, 17% occur before the twentieth year and nearly 65% before the fortieth year of age.

Among the causes of preventable or controllable diseases are the following: infection, defects in nutrition, air deficiencies (defects in ventilation), injuries from accident, overstrain, faulty posture (physical trauma), "psychic trauma" (injuries from emotional excess), glandular defects or deficiencies, poisonings, and (to some extent) heredity. Some illnesses which shorten life are the result of violation of established rules of personal hygiene.

### Loss of Life from Communicable Disease

Infectious or communicable diseases are caused by living germs which are passed from one person to another. Even a vigorously healthy person may contract typhoid fever when his body is invaded by the typhoid fever germs. Avoidance of contact with sick people and germ carriers, personal cleanliness, care in what we eat and drink and immunization against smallpox, diphtheria, scarlet fever and typhoid, are the means by which we protect ourselves against communicable disease.

Approximately 25% of the total deaths in the United States are reported as caused by communicable disease. This fact obviously makes the prevention of communicable disease one of the foremost public health problems. The loss and waste caused by these diseases are far from completely indicated by the death rate; there are from 5 to 50 cases of disease for every reported death.

The following table shows for some of the communicable diseases the death rates per 100,000 population in 1922 and the percentage of



the total deaths in the United States (Registration Area) which was due to each disease.

### Mortality from Communicable Diseases

U. S. Registration Area, 1922

<i>Cause of Death</i>	<i>Rate per 100,000 Population</i>	<i>Percentage of Total Deaths</i>
Influenza and Pneumonia .....	133.5	11.3
Tuberculosis .....	97.0	8.2
Syphilis .....	16.5	1.4
Diphtheria .....	14.6	1.2
Typhoid and Paratyphoid Fever .....	7.5	0.6
Whooping Cough .....	5.6	0.5
Measles .....	4.3	0.4
Malaria .....	3.6	0.3
Scarlet Fever .....	3.5	0.3
Dysentery .....	2.9	0.2
Pellagra .....	2.8	0.2
Erysipelas .....	2.5	0.2
Lethargic Encephalitis .....	1.4	0.1
Epidemic Meningitis .....	1.0	0.1
Smallpox .....	0.7	0.1

### Childhood's Loss Through Communicable Disease

The toll of some of the more important communicable diseases in childhood is reflected in the table below. Pneumonia stands either first, second or third as a cause of death at all age groups shown. Diphtheria stands first at ages 3, 4 and 5 to 9. Whooping cough is the fourth most important cause at age 1. Scarlet fever stands 5th at ages 5 to 9. Measles is in 5th place at ages 1 and 2. Tuberculosis is in 1st place at ages 10 to 19.

### Percentage of Total Deaths Within Each Age Group Due to Certain Diseases and Rank of Each Disease as a Cause of Death

U. S. Registration States, 1920

Age	Pneumonia		Tuberculosis		Measles		Scarlet Fever		Whooping Cough		Diphtheria		
	Rank	% of Total	Rank	% of Total	Rank	% of Total	Rank	% of Total	Rank	% of Total	Rank	% of Total	
Under	1	3	13.0	--*	1.2	--*	1.1	--*	0.1	6	3.5	--*	0.5
	1	1	23.8	7	4.0	5	6.5	--*	1.0	4	7.1	6	4.8
	2	1	19.1	7	5.2	5	5.8	8	2.9	6	5.3	3	10.9
	3	2	14.9	5	5.2	6	4.5	8	4.1	7	4.5	1	15.0
	4	2	12.6	5	5.1	7	3.7	6	4.6	8	3.3	1	16.9
5-9	2	2	10.4	4	6.3	9	3.0	5	4.0	--*	1.6	1	14.5
10-19	2	2	16.9	1	19.5	--*	0.8	--*	1.2	--*	0.2	8	2.5

\* Not among ten most important causes.

In another significant way we may say that there occur in children before they have reached their tenth birthday :

99% of all Whooping Cough Deaths  
 89% of all Measles Deaths  
 86% of all Diphtheria Deaths  
 74% of all Scarlet Fever Deaths  
 34% of all Pneumonia Deaths  
 7% of all Tuberculosis Deaths

The newer methods of disease prevention are making distinct inroads upon the formidable death rates of some of the communicable diseases. This is illustrated in a striking way in the diphtheria statistics for New York City where the Schick test and immunization with toxin-antitoxin have been carried out by the Department of Health on an extensive scale during the past five years. Nearly 700,000 children of school and pre-school age received the Schick test and those found susceptible were given injections of toxin-antitoxin. The following table shows a very marked drop in the number of cases of diphtheria during the years 1922 and 1923, and an even more striking decline in the number of deaths from this disease.

*Diphtheria; Incidence and Mortality, 1919-23*

Year	Cases	Deaths
1919 .....	14,014	1,239
1920 .....	14,166	1,045
1921 .....	15,110	891
1922 .....	10,427	874
1923 .....	8,050	547

Diphtheria, like other communicable diseases, fluctuates somewhat from year to year. That the present decline in New York City is not a chance fluctuation due to many different causes, but is especially significant, is suggested by the fact that the annual death rate per 100,000 in 1923 is the lowest in the records of the city. From 1901 to 1905 the average death rate was 51. From 1906 to 1910, the average was 38.7. From 1911 to 1919 the annual rates have varied from a maximum of 29.3 to a minimum of 19.6. The rate in 1923 was 9.0 or about one-fifth that at the opening of the 20th century.

### Economic Loss Through Communicable Disease

Dr. Eugene Lyman Fisk estimates the annual losses from four communicable diseases to approximate one billion dollars. He considers these diseases theoretically wholly preventable, and at least 75% practically preventable.

Tuberculosis, annually from death alone.....	\$500,000,000
Typhoid Fever, annually .....	135,000,000
Malaria, annually .....	100,000,000
Hookworm, annually .....	250,000,000
<b>Total</b> .....	<b>\$985,000,000</b>

The economic loss to this generation, in loss of life and productive working power, due to tuberculosis, he estimates at twenty-six billions of dollars.

### The Declining Death Rates

The index of health most commonly used is the annual death rate or the number of deaths occurring in a year's time multiplied by 1,000 and divided by the population. This gives a figure representing the annual death rate per 1,000 people. The annual death rate for the United States Registration Area (that section of the country in which reliable records are kept) in 1922 was 11.8. The rates in preceding years are shown in the table.

<i>Year</i>	<i>Annual Death Rate per 1,000</i>
1900 .....	17.6
1900-1903 .....	16.5
1905 .....	16.0
1910 .....	15.0
1915 .....	13.6
1916 .....	14.0
1917 .....	14.3
1918 .....	18.1
1919 .....	12.9
1920 .....	13.1
1921 .....	11.6
1922 .....	11.8
1919-1922 .....	12.3

It will be observed that the death rate has declined since 1900. If the death rate of the 1900-1903 period prevailed in 1922 there would have been 1,805,000 deaths in the entire country. Actually there were about 1,290,000 deaths, a difference of 515,000. The reduction in the death rate during these years has been due largely to the advances in sanitation, in medical practice, in individual interest, in personal hygiene and to the economic prosperity which has made possible the fuller application of our already large knowledge of disease prevention and health attainment.

By going back still farther we can visualize even more clearly the progress of a century. Records compiled by the Prudential Insurance Company from four cities, New York, Philadelphia, Boston and New Orleans, show two outstanding achievements, first the remarkable decline in the death rate, and second the elimination of those devastating outbreaks of cholera, typhoid, smallpox and yellow fever which were so common in the first half of the 19th century. The average death rate from 1815 to 1850 was approximately 28, from 1850 to 1900, 26; from 1900 to 1920, 17; and for 1921 and 1922 about 12.

### Death Rates in Childhood

As measured by the death rate the age of least health hazard is from 10 to 14 years. The death rates by individual years up to 20 are well illustrated from the figures of Detroit compiled by the

Department of Health of that city for the year 1921. The lowest rates are at ages 10, 11 and 12.

<i>Age</i>	<i>Population</i>	<i>Number of Deaths</i>	<i>Annual Rate per 1,000</i>
Under 1.....	20,456	2,304	113.0
1.....	20,499	411	20.0
2.....	21,361	202	9.5
3.....	23,062	151	6.5
4.....	21,681	114	5.3
5.....	20,999	106	5.0
6.....	20,361	96	4.7
7.....	19,245	68	3.5
8.....	18,260	60	3.3
9.....	16,597	45	2.7
10.....	16,203	38	2.3
11.....	14,750	38	2.4
12.....	15,253	35	2.3
13.....	14,717	42	2.9
14.....	13,931	42	3.0
15.....	12,032	32	2.7
16.....	12,603	53	4.2
17.....	13,473	58	4.3
18.....	15,042	46	3.1
19.....	13,023	63	4.5

#### Illness among New York School Children

Judging by figures from New York City secured by the New York State Commission on Ventilation, a school child is absent from school one day every three weeks. On the basis of 180 days in a year the average child misses 11 days. On 6 of these days the child is kept from school by illness. Two days of this sickness absence are due to colds and associated infections of the respiratory tract such as bronchitis and tonsilitis. On the other four days it is communicable disease such as diphtheria, measles, etc., as well as headaches, stomach ache and other varied indispositions that keep him at home.

The working man and woman lose about 3 per cent of their working days due to illness.

In addition to these illnesses that keep people home from school and work there are those innumerable less acute ailments which handicap efficiency and lessen vitality. In this category are those physical defects which retard school progress and pave the way for more serious drawbacks in life.

#### Physical Defects of School Children

It is commonly reported, that more than 75 per cent of school children suffer from some physical defect.

Dr. Thomas D. Wood is the authority for the following estimates of the prevalence of physical defects among the 24,000,000 children of school age in America. Seven-tenths per cent of the school children (nearly 200,000) suffer from organic heart trouble. Many of these cases could be prevented, for example, by



removal of infected teeth or diseased tonsils and adenoids, or by protecting the child from over-exertion or exposure for a sufficiently long period of convalescence after illness.

The number of children with decayed teeth varies in different localities from 50 to 98%. There is reason to believe that this may be largely remedied by proper diet beginning with that of the mother, and by hygiene of the mouth and teeth.

The application of our present knowledge of healthful living would forestall the appearance of many of these defects. Many of these might be prevented if parents and teachers had sufficient education in matters of hygiene to protect children from unnecessary risks to health. The remedying of these and other defects, once they have been developed, lies largely with physicians, dentists and other professionally trained experts.

It is estimated that at least 5% of the children of school age, approximately 1,000,000 have been infected with tubercle bacilli showing the presence of tuberculous infection, although examination of school children rarely reveals 1% with active disease.

From 30 to 40% have adenoids and diseased tonsils.

One-fourth of the school population, or about 6,000,000, have defects in vision.

From 25 to 40% have defects of posture and foot arches.

From 15 to 25% are malnourished. This is largely a preventable defect, and one which health education may help effectively to reduce.

### Physical Defects as Revealed by the Draft

So common are these abnormalities that their significance is not fully appreciated until a great national crisis occurs. It is at such times when the manhood of the country is put to the test. Armies cannot temporize with weak or disabled men. An inventory of our country in 1917 and 1918 disclosed that one out of every three young men was unfit for military service. The reasons for disqualification covered a wide range. Weak hearts and blood vessels were the cause of 13% of the rejections; defective bones and joints of 12%; defective eyes of 11%; tuberculosis of the lungs of 8.7 and defects in gross bodily structure of 8.4%. The remainder was due to other causes.

### Mental Health

A sound physical body is not sufficient if a mental defect exists. Five per cent of the army rejections were charged to mental deficiency. The seriousness of this is seen in the records of many of the cases of juvenile delinquency and later in some of the more serious crimes.

In a survey of the school children of a large city by the National Committee on Mental Hygiene 13.2% were found mentally abnormal and unstable. Of cases of juvenile delinquency 75.9% were found to be mentally abnormal. Among dependency cases in adults 72.9% were abnormal.



### Social Health

The problem of social hygiene is fundamentally the problem of creating a new point of view; a new attitude, a new standard. It has been truly said that, "A little space of youth belongs to us; the rest of life to our children." To see with vivid imagination the results of our own conduct upon our descendants; to cherish the welfare of coming generations; to build with far-seeing constructiveness the heritage which we give them; it is these which are the foundation of social health.

Sound social health will not be gained by overwhelming bewildered children with statistics of venereal disease. The most effective service the schools can perform in the realm of social hygiene is in creating constructive ideals of usefulness; by establishing habits of accepting community responsibility, and by informing young people accurately and scientifically of those fundamental facts of life and human relationships which will guide them in meeting their problems.

While some of the problems of public health may be solved by dispelling ignorance, the problems of social health must be met in addition by directing human desires and motives.

### Accidents

As will be noted in a previous table, a very important group of causes of death, one quite apart from disease, is violence or accidents. Over 65,000 people lost their lives in 1922 from these causes. The most common are automobile accidents. Death rates per 100,000 in the United States Registration Area in 1922 were as follows:

Automobile Accidents .....	12.5
Falls .....	12.1
Burns .....	6.4
Drowning .....	6.4
Railroad Accidents .....	6.1

Approximately one-third of the automobile deaths are in children under 15 years of age.

In 1915, the death rate from automobile accidents was 5.9 per 100,000. In 1922, it was 12.5.

These facts are discussed in more detail in the section on Accident Prevention.

### Conclusion

For each generation of mothers and fathers to rear their children intelligently, scientifically and healthfully, is to enrich the social heritage.

Young people who have had a life-long training in healthful living for themselves, and who have been thoroughly convinced of the importance of good health, will seek every possible means of safeguarding the health of their children. The effects of a thoughtful, wisely planned, constructive program of health education will, in part, be immediately apparent, but they should be felt even more strongly in the second, the third and the fourth generations.

It must be evident that much has been accomplished during the past 20 years to make "growth more perfect, decay less rapid, life more vigorous and death more remote." But the accomplishment is only an earnest of the possibilities of the future, when our present knowledge shall have been applied to our daily lives and the still hidden secrets of the future revealed. But without the intelligent co-operation of an educated public, the successes of the physician and the public health worker will be distressingly incomplete.

1. The child born today may expect to live longer than the child did who was born a century ago. There is every reason to believe that the child of tomorrow may expect a longer life than the child of today, provided we direct our efforts to that end.

2. The death rate today is strikingly lower than it was two decades ago. It has not yet reached its lowest limit, but further reduction depends largely upon education, and personal as well as official interest in health.

3. Approximately one-fourth of the deaths in the United States are reported as the result of communicable diseases. Theoretically, communicable diseases are entirely preventable, but it is well established that their prevention depends in great part upon the coöperation of an educated public, e. g., in typhoid fever, smallpox, tuberculosis.

4. Other important illnesses which shorten life are the results of violation of the laws of health. These are preventable, provided the education of the individual has been such as to enable him to plan his habitual régime of living in accordance with the laws of health.

5. The death rate among babies has been greatly reduced, but the infant death rate still is larger than that of any other age. Education in the care of babies, before and after birth, is necessary in order to reduce this waste of life. A certain amount of such education has its proper place in the schools.

6. Education in accident prevention has been proved an effective means of reducing that entirely unnecessary loss of life, which occurs every year from preventable accidents.

7. Extension of life, constructive health building, cannot be accomplished without education of the masses of people.

In the preceding pages are listed many diseases which are entirely preventable or susceptible of great reduction. No one resource is adequate alone to accomplish this, but it can be fairly said that the knowledge of facts and understanding of principles which the school is in the best position to provide are indispensable for the maintenance of health and prevention of disease.

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## II

### WHAT THE SCHOOLS CAN DO

The part which education plays in producing a healthy nation is larger than the public realizes. It is true, however, that education in the public schools may be more effective in some instances than in others. The teacher who is interested in health education should know in what respects she may expect health teaching to help this generation in meeting its own health problems and those of future generations. She should also know how to avoid wasting time on teaching which will bring little or no returns. Wise direction of effort to the most fruitful fields, and wise selection of material are among the first essentials in health education.

Although the needs of each classroom may vary, there remain certain principles and facts which have a general and nation-wide application.

The paragraphs following present briefly the factors modifiable by education upon which the health of the individual and community depend, with suggestions which show how education can affect these conditions.

Of the factors which promote good health, the following are modifiable by education:

1. Hygienic personal habits of living in regard to eating, dressing, sleeping, cleanliness, exercise, mental, emotional and social behavior, safety and first aid conduct, etc.
2. Knowledge of health principles and facts regarding
  - (a) Hygiene for different age groups.
  - (b) Sanitation.
  - (c) Physiology.
  - (d) How to find, evaluate and use health service and medical advice.
  - (e) Care of the sick.
3. Environmental conditions
  - (a) Adequate and safe food, water and milk supplies.
  - (b) Sanitary sewage disposal.
  - (c) Good housing conditions.
  - (d) Favorable industrial and economic conditions which help to prevent
    1. Poverty.
    2. Unhygienic working environment.
  - (e) Well supported, adequate, public health practices.
4. Stimulating ideals of health, such as
  - (a) Desire for vigorous and abundant health; discontent with low vitality and mere absence of disease.
  - (b) Desire to attain and maintain favorable standards in weight, posture and the daily habits necessary to secure the highest efficiency and satisfaction.
  - (c) A practical conviction that prevention is better than cure, with realization that it is distinctly uneconomical and scarcely moral to "keep going as long as possible" before seeking remedial measures.

- (d) Development of a "health conscience" which realizes the culpability of exposing other persons unnecessarily to infectious disease; willingness to suffer inconvenience for the sake of the community, for example, in quarantine.
- (e) Faith in scientific professional service and hygienic living; not in fads and quackeries.

5. Eugenic marriages.

Education in the public schools can affect some of these factors vitally and certainly; others only remotely or uncertainly.

Hygienic personal habits of living, knowledge of the principles of health, and of disease prevention, and stimulating ideals of health are the factors which may be most readily affected by the teaching of the child at school

Health teaching in the schools can only to a limited extent change the immediate present environment of the pupils. However, improvement of the living conditions of the future depends upon the interest and intelligent effort of future citizens and upon their support of legislation and activity for the public welfare. By establishing attitudes and ideals in school children which will stimulate them now and later to give such interest and support, and by supplying to them the necessary scientific basis, health education may become a means of bettering the living conditions of the future.

At the present time, some universities, colleges and normal schools are carrying on carefully organized programs of instruction in social hygiene and eugenics. Scattered attempts in this field of health education have been made in a few high schools, but any systematic instruction in social hygiene in the secondary schools awaits the more general establishment of corresponding instruction in this subject in the higher institutions, especially in those where professional training is given to prospective teachers.



### III

## THE MEANING OF HEALTH

The desirability of good health is assumed by the majority of persons without question. That there are significant social, moral and spiritual consequences of good or bad health is less frequently appreciated. However, these consequences are real and for this reason a program of health education should not be based upon a study of physical well-being alone. This is illustrated, for example, by the following statement of reasons why the child, youth, or adult, needs good health.

"First, because health largely determines the factors of interest and endurance.

"Second, interest and endurance largely determine efficiency.

"Third, efficiency during youth, in studies, and games; and during maturity, in the more serious tasks of life, largely determines happiness.

"Fourth, happiness largely determines disposition and attitude."

(W. S. RANKIN, M. D.)

Health education can be promoted only by emphasizing all aspects of health; physical, mental, social, moral. The teacher of health should look for normal development of the child from all of these points of view. The ideal of health is not mere freedom from obvious deformities and pathological symptoms. It is the realization of the highest physical, mental and spiritual possibilities of the individual.

The qualities or significant characteristics of the healthy child should be familiar to every teacher.

### The Healthy Organism: Physiologic Health

Physiologic health implies the well-being of each cell and organ, and their harmonious coöperation. Tests of this are:

1. Proper growth in height, weight, structural and functional development. This includes more than mere freedom from malformation, abnormal growth or structural defects.

2. Full efficiency of functions: muscular, nervous, mental, emotional, glandular, nutritive, circulatory, respiratory, excretory, and reproductive. This means that there is a feeling of abundant energy for all the ordinary activities of life, and some reserve for unusual strains.

It may require a careful physical examination to discover in detail the condition of the child on all the points mentioned above. But there are certain simple evidences of bodily health which any one may easily observe.

1. The healthy child is largely unconscious of his body. He has a general sense of well-being, a feeling of muscular power and of pleasure in movement. He is not conscious of the vital organs. When a child is in pain, or in ill health, on the other hand, he becomes conscious of parts of his body, which so far as he knew before might have been non-existent.

2. He possesses sufficient vigor so that a reasonable amount of work and play is more stimulating than fatiguing.

3. His appetite is steady, wholesome and not capricious.
4. His weight does not vary widely from the standard weight for his age and height.
5. He sleeps well, and during the normal regular hours of sleep, he recovers satisfactorily from fatigue.
6. He is able to adapt himself to new conditions of environment, climate, or modes of life without undue physiologic disturbances.

### **The Healthy Personality: Mental, Emotional, Moral, and Social Health**

To picture the healthy mental, emotional, moral and social qualities of the child is to describe the healthy personality. In describing the characteristics of a healthy personality, it is desirable to allow for a variety and range of individual differences. To be well balanced it is not necessary to suppress one's individual qualities, or to conform to a uniform pattern. It is nevertheless useful, keeping this in mind, to describe the simplest and most significant evidences of a healthy personality. They are as follows:

1. The child possesses intelligence adequate to meet the demands of his life. This includes the whole range of intelligence from very superior to somewhat below the average. Some very healthy personalities are found among those whose intelligence is inferior to the average, but is nevertheless sufficient to meet the demands of their simple lives of manual work.
2. He is able to concentrate his attention upon the matter before him, and to perceive the important elements of the situation with accuracy and alertness.
3. He is interested in the world about him, and curious to understand it.
4. He is generally self-confident; he expects success and achieves it with reasonable frequency.
5. He is active in overcoming difficulties; he does not "day dream" so much that he fails to meet the actual situation.
6. His predominating emotional qualities are happiness, cheerfulness, courageousness. He is not troubled by unnecessary fears, shyness, or timidity. His emotional responses are those that are appropriate and useful for the occasion.
7. He does not ordinarily brood or sulk, or indulge in morbid introspection.
8. He has many objective interests; friends, hobbies, games in which he finds adequate self-expression.
9. He is companionable and mingles easily with other children. He adapts himself easily to co-operative enterprises; to leadership or followership.
10. The child's relationships with children of the opposite sex are wholesome.
11. He has a sense of responsibility for the happiness and well-being of his friends, school mates and members of his family.

## IV

### ESSENTIAL SUBJECT MATTER FOR THE TEACHER

#### A. THE PHYSIOLOGIC BASIS OF HEALTH

The determination of what is a healthful way of living is not an arbitrary unreasoned process. It is based upon scientific truths, and is an entirely rational procedure. Even the simplest health habit has its scientific basis.

It is impossible to give here a comprehensive statement of the physiologic basis for health. A mere suggestion is made of the kinds of knowledge which the teacher should have in order that her health teaching may be intelligent. Although it may be unnecessary for the child to know the physiologic "why," particularly in the early years, the teacher should know the reasons for the health habits and attitudes which she strives to establish.

#### The Physiologic Basis for Some Health Habits

##### FOOD

We eat, not simply because it is customary social usage; but because food is the source of materials by which our bodies are built and energy by means of which all activity is made possible. The body has certain well-known definite needs both of kind and amount of foods (cf. Ch. IV, Section C, Nutrition and Health). Yet many persons select their diet by no other rule than the whim and caprice of the moment.

##### BIG MUSCLE ACTIVITY

Certain qualities of vigor and strength of vital importance to health depend upon development which comes from big muscle activities. While these are of more importance in childhood and youth, they should in generous degree and in adaptation to age and individual needs, be continued through life (See Ch. IV, Section F, Physical Education). Yet the tendency of civilized life is towards work which demands long hours of sitting down; we take our recreation sitting down in the movies and theatres and we even travel from place to place sitting down, in automobiles, trains or subways.

##### SLEEP

The physiologic mechanism of sleep is not well understood, but it is firmly established that sleep is necessary for the repair and rejuvenation of body tissues. During sleep voluntary activity is suspended and bodily energy is conserved for growth. Sleep and rest are essential parts of the remedy for many cases of malnutrition; they

are a necessity for recovery from any illness. There must be in any individual's life a balance between activity and inactivity; excess or deficit of either eventually results in ill health.

### AIR AND VENTILATION

The physiologic necessity for air is obvious; complete lack of it means death in a very short interval of time. This is not simply because the lungs need air; all life processes are dependent upon sufficiency of oxygen; without oxygen to be carried by the hemoglobin of the blood to all parts of the body there can be no metabolism, no cell activity, no removal of wastes.

However, the essential problems of ventilation relate not so much to the regulation of the chemical composition of the air, as to control of air in relation to its physical properties.

The principles recognized as most important at the present time in relation to air and ventilation are as follows:

1. The best school room temperature is from 65 to 68 degrees F. and should never be allowed to go above 68 degrees when the outdoor temperature is below that point. A fluctuating or changing temperature within the limits stated above is preferable to unchanging uniformity.
2. Stagnation of air should be prevented but air movement should not cause disturbing drafts.
3. Outdoor air possesses exceedingly important health values. Present approved standards of ventilation recommend window or modified window ventilation in order that rooms may be provided directly with outdoor air.
4. Excessively dry or moist atmospheres are less comfortable and may be less favorable to health. However, window or modified window ventilation renders the artificial control of humidity unnecessary.
5. Air should be as clean as possible and free from obnoxious gases and offending odors.

### ELIMINATION OF BODILY WASTE

Faulty elimination of waste may result in headaches, backaches or general sluggish feeling. It has a variety of causes, some of the most frequent of which are lack of proper exercise, faulty diet, and insufficient amount of water. It is always a sign of some fault which needs correction. The habit of regular daily evacuation of the bowels is one of the most important of health habits, and its neglect one of the most frequent causes of constipation.

### IMMUNITY TO INFECTION

Immunity to disease, the ability to resist infection, depends upon the presence in the bloodstream and body cells of various "immune substances" or "antibodies." The physiological chemistry of these substances is very complex. It is not known just how far hygienic living and vigorous health serve to increase the formation and powers of these antibodies, but there is a close relationship.

### MENTAL AND PHYSIOLOGIC HEALTH

There is also an intimate interdependence between mental and physiologic health. This is most clearly illustrated in emotional reac-



tions. Fear, anger and strong excitement, for example, stimulate the ductless glands to greater activity, inhibit digestion, and increase the heart rate. On the other hand, it is well known that illness, or defective functioning of any important parts of the body is conducive to moods of depression, worry, irritability.

#### ALCOHOL AND NARCOTICS

There are many reasons why it is healthful to abstain from use of narcotics, and alcoholic drinks. These reasons are moral, social and economic, but if they are sound they are based upon the facts of physiologic harm wrought by use of these substances.

#### HEREDITY

In Chapter III, *The Meaning of Health*, it is stated that tests of physiologic health are (1) Proper growth in height, weight, structural and functional development, and (2) full efficiency of function; muscular, nervous, mental, emotional, glandular, nutritive, circulatory, respiratory, excretory, and reproductive.

Growth and efficiency of function are dependent upon both hereditary factors and conditions of environment and manner of living.

Hereditary factors can be controlled only through eugenic measures. No one has the power to choose his grandparents; the generation now living is responsible for the heritage of the coming generations.

It lies, however, clearly within our power to regulate the manner of living.

#### Significance of Growth as an Index to Health

Growth is always one of the signs of health in young animals and children. This does not mean that retarded growth is always a sign of ill health. There are periods in the individual's life and certain times of the year when slower growth may be normal. For the child to be led to believe that he is ill, simply because he is growing less rapidly, is a serious mistake. This is particularly so if the health examination records show no physical defects, or underlying causes of ill health.

#### Significance of Weight as an Index to Health

The weight of the child is the best single, practical, concrete (and at least) introductory evidence of health to interest the child, the child's parents, and to serve as a definite record or index for trained workers, including the physician and the pediatrician themselves.

The use of this universally interesting test of health in weighing children has been the most effective introductory measure in improving the health of children which has ever been found.

Through the use of this test and the classification of children into the well-nourished and under-nourished (however inaccurate this



classification may be) multitudes of delicate, under-nourished children have had their physical defects discovered and corrected and have had careful study given to home conditions, and the regimen or personal hygiene with great improvement in these influences, and the health of these children has been strikingly advanced.

However, no single test or sign of health is wholly adequate, accurate, or satisfactory.

Classifying the children by a weight standard or measurement alone is not scientifically or clinically an accurate method of separating those who are unhealthy or malnourished from those who are healthy or properly nourished.

Experience shows to many that the 7 or 10% line below the standard weight of children for height and age includes few children who are not undernourished, or who do not for that or some other reason deserve special attention. However, there are signs of malnutrition other than weight deficiency which are very important and which may be found in children well within the 7 or 10% margin as to weight.

Therefore in addition to the weighing of children, which can be done by health workers other than physicians, other well-established evidences of growth and health should be employed. These include (a) color of skin and mucous membranes, (b) lustre of the eye, (c) bodily posture and bearing, (d) firmness of tissues, (e) presence of subcutaneous fat, (f) alertness or keenness of nervous and muscular action, (g) susceptibility to fatigue, and (h) condition of digestion and assimilation of foods, and excretion of waste.

### Changes with Age

There are physiologic changes which are characteristic of various ages. Change is most rapid in infancy and early childhood, but even then the general rule is that developmental changes are gradual, not sudden. Even the striking changes in adolescence have their early, inconspicuous beginnings, before the obvious transformation of child to youth takes place.

In spite of changes, the health needs of various ages are more alike than they are different, especially after the period of infancy and early childhood is passed.

While the same dietary essentials are required by both for the building of the body and the control of all its functions, greater emphasis should be placed in childhood than in adult life, on those factors in the diet which control growth.

Big muscle activity may be more important during childhood and youth than in maturity, but there never comes a time in life when muscular activity is unnecessary. The period of the early twenties is the one usually of most vigorous muscular activity.

There are no age differences in the need for fresh air nor in the necessity for elimination of waste, except those relating to body weight.

As far as the health needs of school children at the different ages are concerned, there is not a great difference in their physiologic

needs. There are much greater differences in methods of psychological approach to the program of health education at these age periods because of the differences of mental development at these ages. Differences in children should be met by differences in methods.

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The National Health Series, recently announced by the National Health Council, includes books covering a wide range of health information. The complete series of 20 volumes is listed below. They may be obtained from the National Health Council, 370 Seventh Avenue, or Funk and Wagnalls Company, New York. Average number of pages 70. Price per set, \$6.00; per volume, 30 cents, net.

1. Armstrong, D. B. *Community Health; How to Obtain and Preserve It*.
2. Bigelow, Maurice A. *Adolescence; Educational and Hygienic Problems*.
3. Bolt, Richard A. *The Baby's Health*.
4. DeNormandie, R. L. *The Expectant Mother; Care of Her Health*.
5. Frankel, Lee K. *Health of the Worker; How to Safeguard It*.
6. Galloway, T. W. *Love and Marriage; Normal Sex Relations*.
7. Gillett, Lucy H. *Food for Health's Sake; What to Eat*.
8. Hart, T. Stuart. *Taking Care of Your Heart*.
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11. Meanes, Lenna L. *Exercises for Health*.
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15. Tobey, James A. *The Quest for Health; Where It Is and Who Can Help Secure It*.
16. Williams, Frankwood E. *Your Mind and You; Mental Health*.
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## B. PREVENTIVE MEDICINE AND HEALTH

The widespread feeling that the positive aspects of health education should be emphasized rather than the pathology of disease is eminently sound. It is equally true, however, that general understanding of the scientific and well proved means of preventing diseases, communicable or otherwise, is invaluable. Facts regarding prevention of ill health are not necessarily distressing or harmful to children, and should be included in a program of health teaching for classes in which the pupils are of appropriate ages. The teacher should be able to discriminate carefully, however, between the fruitful and the wasteful or misdirected efforts in health teaching.

A program of health education should provide specific information as to the cause and the means of spreading communicable diseases, and also regarding the causes of many preventable diseases other than the communicable or infectious diseases. The knowledge of the specific causes of communicable diseases, the means by which the individual may protect himself, such as by vaccination, the cooking of food, the boiling of water, and how to avoid contact with infection are of first importance in prevention of communicable diseases.

In a more indirect but none the less valuable way, health education contributes to the prevention of disease by

1. Spreading a higher appreciation, on the part of the individual, of the significance of physical health.

2. Establishing a greater interest, on the part of the individual, in the maintenance of a higher level of vitality.

A health program may also be preventive by contributing to greater certainty of early and more complete recovery in the event that diseases are contracted. Although most of the common communicable diseases appear to affect the strong and robust as well as the weak and feeble, and although the factors of health may play only a minor rôle in influencing susceptibility to these diseases, it is safe to say that general good health does play an important and often a decisive rôle in determining the extent, the certainty and completeness of recovery, from the infection.

### Will Good Health Prevent Communicable Diseases?

It is often asserted, and often believed, that the best way to prevent a disease is to have the bodily organs at such a high status of efficiency through exercise, regular sleep, proper diet, etc., that disease germs are easily resisted. It is often assumed that such efficiency of the bodily organs contributes fundamentally to the individual's ability to resist the invasion of disease organisms.

However, a program of health education which depends *ONLY* on upbuilding general vitality is in itself quite insufficient for the needs of people growing up in a modern social organization.

There is little evidence that soundness of body is sufficient to protect persons against influenza, typhoid fever, diphtheria, malaria, hookworm infection, or most of the common infectious diseases. Infection depends upon the size of the dose of the infecting organism, the virulence of the organism, and the relative susceptibility of the individual person. As a rule, this susceptibility depends more upon the presence or absence of the immune substances in the blood stream and body cells than upon general bodily efficiency. To prevent diphtheria, the immune substances for diphtheria must be present; to prevent typhoid, the typhoid "antibodies," and so on for each disease.

Consequently, it is necessary to take measures to prevent the spread of infection, to reduce the likelihood of exposure to infectious diseases, and to extend the protection afforded by vaccination and other means of immunization.

It should be noted, however, that there are a few diseases, notably tuberculosis, colds, and some minor infections, susceptibility to which is greatly increased by conditions such as malnutrition and poor hygiene. In these instances, poor nutrition, fatigue, lack of sleep, exposure to wind, cold and wet, play an important part in lowering resistance. This seems to indicate that the prevention of these communicable diseases does in part depend upon the upbuilding of general vitality.

### Active and Passive Immunity

The newer knowledge in the prevention of diseases like diphtheria, scarlet fever, and typhoid and the well accepted facts of vaccination against smallpox indicate that modern methods of immunization must come into use to a larger and larger extent before we can hope for the real progress in the control of diseases, that is now within our reach.

There are two forms of immunity, or protection against disease that can be developed in human beings, one known as active and the other as passive immunity.

In active or acquired immunity, individuals usually become permanently protected after an attack of a disease such as typhoid fever, measles, and scarlet fever. During the progress of the illness the tissue cells of the person with the disease have acquired the property of producing specific protective agents or antibodies and this property is retained for many years and possibly for a life time. A similar active immunity can be produced by injecting individuals directly with the products of bacteria such as toxins or vaccines. In this way the individual becomes protected for a long time, and possibly permanently, through antibodies, which his own tissue cells have acquired the property of producing. Active immunity following injections of the diphtheria toxin—antitoxin mixture and of various vaccines, such as those of typhoid and cholera, are examples of ac-



quired active immunity. Vaccination against smallpox and hydrophobia represent similar active forms of immunity produced by the inoculation of modified viruses.

In passive immunity an individual is injected with blood serum of animals which have been previously inoculated with the products of bacteria, such as toxins and vaccines, and whose blood shows the presence of protective substances or antibodies. The animals themselves have developed an active immunity. Antitoxins, such as tetanus and diphtheria antitoxins, and antibacterial sera, such as those used against infections with the meningococcus and pneumococcus, are examples of antibody containing sera obtained from animals, usually horses. These sera are used for protective and for curative purposes. It is important to emphasize the fact that in using these sera we are employing nature's own mode of defense—taking from the horse and applying quickly the protective agent which it has developed, instead of waiting for the slower development of similar protective agents in the human bodies that have been attacked. The protection afforded develops as soon as the serum containing the preformed antibodies is injected, but the duration is rather short, from 2 to 3 weeks, and corresponds to the time the foreign serum remains within the body of the injected individual. The term passive immunization also refers to the use of convalescent and normal sera obtained from human beings who have recovered from diseases like measles, scarlet fever and poliomyelitis. Their blood sera contain antibodies that have developed during the period of disease or exposure. The protection afforded by the injection of these human blood sera is also only temporary.

That many individuals are naturally immune against certain diseases, such as diphtheria and scarlet fever, has been known for a long time. The explanation for the way in which such an immunity is acquired by human beings has been learned only recently. The use of the Schick test for the determination of the diphtheria susceptibility and immunity, and of the Dick test for the determination of scarlet fever susceptibility and immunity has thrown a flood of light upon the subject of "natural" immunity to these two diseases. Dr. Abraham Zingher, of the New York City Department of Health, has found after testing over 350,000 children of school age and pre-school age, by the Schick test that contact exposure to repeated infection with the diphtheria bacillus is a most important factor in producing the so-called "natural" immunity to diphtheria. Children who are not frequently exposed to infection, such as those of the more well-to-do and those living in the rural sections and small communities, show as high as 80 to 95% susceptibles, while the children of the poorer classes, living in the congested districts of New York City show only 15 to 25% of susceptibles. The same holds true for the susceptibility and immunity of children to scarlet fever, for the determination of which the newly discovered Dick test is used. The inherited family factor and racial factors also play an important part, certain families showing a high susceptibility to diseases, like scarlet



fever and diphtheria, while other families are relatively immune. The racial factor is seen in the relative immunity of children of Italian extraction among whom we find the lowest proportion of positive Schick and Dick reactors.

Self immunization by contact exposure to other human beings in urban communities, while not to be depended upon as a protecting process, is probably a very important factor in building up a specific resistance not only against diphtheria and scarlet fever, but also against other infectious diseases which are more or less endemic in such places. Meningitis, the various contagious diseases and tuberculosis are examples of such diseases. A good illustration of this was brought out in our experience in the camps of this country during the recent war. Camps with soldiers from larger cities such as Camp Upton with its drafts from New York City were relatively free from serious epidemic outbreaks of infectious diseases, while camps drawing their recruits from rural sections and small communities were swept by epidemic and infectious diseases, such as measles, meningitis, mumps and pneumonia.

### 1. These Communicable Diseases Can Be Controlled by Definite Well-Proved Methods

Diphtheria	Dengue Fever	Scabies
Smallpox	Malaria	Trachoma
Tuberculosis	Plague	Rabies
	Typhus Fever	
Cholera	Yellow Fever	Gonorrhea
Dysentery		Syphilis
Hookworm	Pediculosis	
Typhoid Fever	Ringworm	

For all these diseases, definite methods of control are known, and for all those mentioned there are well-proved methods of prevention with which every intelligent citizen should be familiar. The health instruction of the public schools should include this information.

### 2. The Control of These Communicable Diseases Depends Largely Upon Isolation of Infected Persons, Germ Carriers, or Persons with Suspicious Symptoms

Pneumonia	Chickenpox	Scarlet Fever
Influenza	Measles	Colds
Whooping Cough	Mumps	Poliomyelitis
Bronchitis	Meningitis	

Experiments in control of scarlet fever, measles and poliomyelitis, by vaccination and serum inoculations are now being carried on.

School instruction can do very little directly to prevent this group of diseases. Possibly the greatest service the schools can render in this respect is to teach the value of isolation of infected persons, or persons with suspicious symptoms, and the exclusion from school of teachers and children with colds or coughs, fever or sore throats.

### 3. Correct Habits of Living in Some Instances Will Help to Prevent These Non-Communicable Diseases or to Prolong Life, if They Exist

Diabetes  
Diseases of Arteries  
Gout

Certain Heart Diseases—(in so far as they are sequels of communicable diseases).  
Bright's Disease, and chronic Nephritis.  
Apoplexy.

While in many cases of diabetes we are ignorant of the determining factors in its development, there is no question that after it is once established, correct habits of living are essential to its treatment.

### 4. Health Education Can Help to Prevent or to Alleviate These Disorders or Defects

Malnutrition  
Teeth Defects  
Headaches  
Constipation  
Nervousness  
Sleeplessness

Indigestion  
Fatigue  
Some visual defects  
Postural defects, including defective feet  
Endemic Goiter

A large part of the emphasis of health education is justly placed upon the prevention and correction of nutritional defects. The schools may legitimately expect to depend upon health education as one of the effective means of reducing malnutrition.

Regular daily practice of health habits which are taught in a program of health education will prevent many of the non-specific disorders such as headaches, constipation, etc.

The great mass of these non-specific functional disorders which make up the vast majority of cases of ill health, can be properly considered to be avoidable if the person with a sound body and a sound mind applies ordinary intelligence to the conduct of life; while without a sound mind and body, escape from constant and repeated illnesses is difficult unless the environment is unusually well protected.

These defects are not wholly preventable by such measures, and the expert advice and care of physicians will still be needed. How to find and use the expert advice of physicians, clinics, hospitals and public health agencies should be a part of the instruction of the older children.

It is particularly true that the examination of the oculist and the regular visit to the dentist are necessary for complete prevention and cure of tooth and eye defects.

### 5. Accidents May Be Reduced By Safety Campaigns

Safety education activities have proved that there may result a distinct decrease in accidents where such campaigns are carried on.

## 6. Certain Disorders of Behavior and Personality May Be Prevented By Healthful Habits

The roots of many of the nervous and mental disturbances of adult life may be found in childhood habits of (1) emotional instability, worry, fear or excitability; (2) tantrums, sulks and morbid broodings; (3) shyness, self-consciousness; (4) habits of inactivity, procrastination, or day-dreaming; habits of dodging facts and refusing to face truth.

The schools should aim to encourage truthfulness, honesty, cheerfulness, emotional control, unselfishness, helpfulness, sociability, courage, persistence, resourcefulness and a sense of responsibility. The person characterized by these traits is little likely to develop hysteria or other nervous or mental disturbance.

7. Certain hereditary defects coming from marriage of the unfit, i.e., feeble mindedness, congenital syphilis, may eventually be diminished as a result of education. Education in eugenics is one of the necessary methods of preventing marriage of the unfit.

8. Prevention of industrial diseases, poisonings and accidents is a topic which can hardly be presented in an extensive systematic way in public schools. Teaching persons about occupational hazards must in most instances be specific and must apply to the conditions to which the person is exposed, to be of any value. However, the applications of principles of ventilation, lighting, sanitation and other general hygienic measures to industrial conditions may be pointed out in high school courses. Safety education may also include some applications to industrial problems.

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## C. NUTRITION AND HEALTH

### Food and Well-Being Are Closely Correlated

While no one will deny that food is essential to life, many are skeptical of any very close connection between the kind of food eaten and the degree of health enjoyed, and commonly assume that the desire for food will ensure to the individual an adequate supply.

In the past it was not easy to refute this assumption because some of the more spectacular elements of the diet were not clearly defined, and no adequate method had been devised to demonstrate the connection between well-being and diet which students of nutrition felt to exist. Now we know, from thousands of experiments, how a shortage of each recognized dietary essential affects laboratory animals, and we have through these experiments realized that effects of diet are more far-reaching than we had conceived to be possible.

We find no dietary deficiency which does not eventually impair growth, hence in normal healthy animals, growth becomes a delicate index of the quality of the diet. Among human beings not living under such controlled conditions, it is not so easy to tell in a given case of retardation just what the factors in the situation are, since poor heredity, physical defects, hygiene, and latent disease also affect growth. But because these other handicaps exist, it does not follow that diet is exerting no influence; nor that, because attention to diet does not immediately cause a child to gain in weight, food has little to do with undernutrition in children. Dietary factors operate slowly, but they are doing something to a child every day.

Correlation between defective teeth and poor nutrition has repeatedly been observed and commented upon, and the evidence is convincing that dietary deficiencies are a prominent cause of defective teeth. One of the main causes of absence from school in the elementary grades is some form of respiratory disease. One does not have to work with experimental diets for animals very long to realize how quickly a poor diet may produce something akin to a child's running nose and the correlation between susceptibility to infections of the respiratory tract and diet has been definitely made in the case of children by Bloch in Denmark.

Whatever other measures we may institute for the betterment of child health, it is of fundamental importance that an adequate diet be provided, first for his mother to carry him through the period of prenatal life and lactation (breast feeding), and then for himself directly, not only through his growing years, when dietary defects have most immediate influence, but through his later life, since laboratory experiments clearly show that good diets increase the length of life, both by causing early maturity and by deferring the appearance of senility.



### Every Dietary Essential Must Be Adequately Represented

Every dietary essential must be adequately represented. The roles played by calories, proteins, mineral constituents and vitamins are each unique and significant.

#### CALORIES

Mere shortage of total calories is a common cause of malnutrition and underweight. It is often assumed that the appetite will insure the intake of a suitable number of calories, and in many instances it will. But appetite is easily perverted; it is more a matter of habit than many realize. The child who learns to drink coffee in infancy may satisfy his appetite with that and consequently not consume enough total food to satisfy the needs of his body. Likewise, the child who eats on the impulse of the moment and not at regular and suitably long intervals, may fall short of the needed energy allowance.

Moreover, the child who becomes undernourished through bad habit of living loses his keen desire for food and consequently goes progressively downward. In selecting calories for children's diets, it is desirable that from 12 to 13% of the total should come from protein; 50% or a little more from carbohydrates, and the remainder from fat.

#### PROTEIN

As indicated above, for health and growth, a suitable proportion of the total calories must be in the form of protein, most of which may be derived from ordinary vegetable foods. These may well be supplemented by proteins from milk, cheese, eggs, meat, to make sure that the quality of the protein mixture represented in the diet as a whole is suitable.

#### MINERAL CONSTITUENTS

For the regulation of all body functions, for adequate development of bones and teeth, for blood rich in hemoglobin, for freedom from goiter or rickets, a variety of mineral elements including calcium, phosphorus, iron and iodine must have due consideration.

#### VITAMINS

The consequences of serious shortages of the group of substances known as vitamins are more speedily shown than effects of similar deficiencies in other dietary essentials. The terms, A, B, and C have been used to designate three members of this group playing different rôles in nutrition, though now it is believed that there are at least two substances included in the term vitamin A, one growth-promoting, the other preventive of rickets; and probably also two substances hitherto designated vitamin B, one growth-promoting, the other preventive of beri-beri.



A liberal allowance of what has been known as the A vitamin in the dietary greatly promotes health and vigor and decreases susceptibility to many infectious diseases; while an inadequate supply causes a widespread weakening of the body, even though no specific deficiency disease develop. There has been found in cod liver oil and egg yolk a substance, distinguishable from the growth-promoting part of the A vitamin (in which these foods are also rich) by its marked power to stimulate the calcification of bone and prevent or cure rickets. Even when conditions for growth are not ideal as to the relative amounts of calcium and phosphorus in the diet or the amount of sunlight to which the child is exposed, rickets may be prevented by means of these foods containing the antirachitic vitamin, and the child will at the same time get a liberal supply of the growth-promoting factor.

The C vitamin is also essential to the highest physical vigor, aside from its power to prevent scurvy. A generous allowance tends to promote growth and to increase the resistance of the body to disease.

Lack of the B vitamin interferes with growth and may produce a specific disease (beri-beri). These two effects are now thought to be due to two separable factors which may not always be associated. However, these factors are widely distributed in food materials so that there is less likelihood of a shortage of the B vitamin in the diet than of either A or C. The continued use of a diet poor in B vitamin decreases the appetite and interferes with the normal functioning of the digestive tract, so that undernutrition may result even if there are no specific signs of disease.

### The Dietary Essentials Must Be Well-Balanced

Not only must it be borne in mind that these several factors in diet more or less specifically affect well-being, but that they tend to reinforce one another, so that the diet which is adequate in every respect must be more efficient than one which is on the borderline of deficiency as to one or more essentials. Thus, while a full supply of energy is indispensable, even calories may be utilized more economically if the diet is liberally supplied with vitamins. Proteins are utilized more efficiently if the diet is liberal in calories and vitamins; iron is utilized better if the diet is rich in calcium; calcium is stored better if the diet is rich in phosphorus.

The advantage of a food which reinforces the diet at many points is shown in the case of milk. Adding milk to a child's diet means not only a goodly supply of calories but at the same time a liberal proportion of a protein mixture of the best quality; an ash assortment rich and varied; a vitamin assortment which is rich in A, fairly rich in B, but relatively poor in C, so that some other source of C and some supplement for B should always be considered. In other words, milk goes a long way toward making up for possible deficiencies in the rest of the diet, so that it may well contribute a large proportion of the total calories all through childhood and be continued with profit

through adult life. It has recently been shown, for instance, that children store calcium better when a quart of milk a day is a part of their diet than when less milk is used and other sources of calcium substituted.

### Intelligence and Responsibility in Food Selection the Objectives in Nutrition Teaching

We strike at one of the roots of physical unfitness when we begin the teaching of food selection to all children, regardless of whether they appear to be undernourished or not. No immediate striking gain in weight is the objective of such teaching. What we want is to rear children who are intelligent as to the role which food plays in their lives, who are aware of their own responsibility in regard to food selection, and are imbued with a determination to make their daily food a factor contributing to health and not working against it, even though results cannot be measured from day to day nor from week to week—only from month to month or year to year. To this end they must have, (1) the habit of eating certain foods which in large measure insure a well-balanced diet, (2) sufficient knowledge of the part played in individual foods to make up for themselves suitable combinations for meals, (3) such knowledge of their own food requirements as will enable them to satisfy their needs at a table provided for persons with varying requirements, (4) such ideas of the relation of nutritive value to cost of food as will enable them to be thrifty in meeting their body needs.

### A Preliminary State of the Objectives in Teaching Food in the Elementary and Secondary Schools

#### KINDERGARTEN AND FIRST GRADE

When a child comes to school he should have acquired as a part of his pre-school experience, ability to

1. Handle food and utensils without accident.
2. Eat neatly.
3. Eat the quantities and kinds of food apportioned to him (this assumes that they are suitable).

He should have acquired a taste for the following foods:

1. Milk.
2. A variety of ordinary green vegetables, simply cooked.
3. Hard breads, preferably made from flours not entirely deprived of bran coats.
4. Cereals, preferably whole grain, accepting them once a day.
5. Eggs, simply cooked.
6. He should have formed the habit of not expecting sweets regularly, and never except at the end of a meal.

The work of the Kindergarten and the first grade should reinforce what has been learned in the pre-school period. In this period it is most important that contacts be maintained with the home, so that habits of proper eating may become fully established. The little

child is open to suggestions and the teacher should play a large role in helping him to have the right attitude toward his diet. In this connection, the attitude of the teacher is exceedingly important. The mid-morning lunch is a suitable part of the school program of these two grades. If the teacher is well informed as to the significance of various foods in the child's diet and has enthusiasm for helping the child to realize his health possibilities, she can reinforce the liking for milk and other essential foods, impress the necessity of eating only at regular times, etc.

### SECOND AND THIRD GRADES

In these grades, food lessons may be given without the school lunch but such lessons should not be given without being sure that the children know the food which is the subject of the lesson and are made to have a favorable attitude toward it. To secure this most satisfactorily, samples of food may be given to the children on the principle that the only way to learn about eating is to eat. In these grades the idea of respect for food for what it can accomplish for the growing child should be impressed. Various games may be used to advantage to test the children's knowledge of the kinds of food which are most suitable for the growing child. It is still of vital importance to reach the home and secure co-operation in the child's feeding program. Supplementary reading (e.g., Nutrition Primer for First Grade), may reach the home and exert some influence.

### FOURTH AND FIFTH GRADES

In these grades, the work in nutrition should be very closely correlated with elementary physiology. Points which should be emphasized are:

1. That food builds the body.
2. Connection between what the body is made of and those elements in food which help to build it.
3. Connection between body activities and amount of food required.
4. Suitable plans for breakfast, dinner and supper.

Practical lessons should bring out clearly the foods which should appear in the diet each day.

1. Milk, at least one pint, preferably one quart.
2. Two kinds of vegetables every day, preferably two besides potatoes.
3. At least one kind of fruit each day, preferably two, one fresh.
4. A whole grain cereal for breakfast.
5. Some hard bread to chew every day, preferably made from flours not entirely deprived of bran coats.
6. A glass of water between each two meals, besides that on rising in the morning.
7. Three meals according to a regular schedule.

### SIXTH GRADE

In this grade, the food work may be connected with the study of civics and ideas of quality of food developed; for example, the production of a sanitary milk supply; the value of freshness in vege-

tables, fruit, eggs, etc.; the safeguarding of meat; the protection of bread by bakery regulations; the control of public eating places and soda fountains and their place in society. Throughout this work effort should be made to develop certain attitudes, namely:

1. The sense of personal responsibility, not only in choice of food, but in safeguarding food for others.
2. Standards in judgment with regard to suitable foods for the individual.
3. Ideals of self-control in regard to kind of food, amount of food and time of eating food.

## JUNIOR HIGH SCHOOL

### SEVENTH TO NINTH GRADES

In these grades correlation with civics will be continued and others developed with biology and possibly sociology.

Food requirements of the individual pupil should be studied quantitatively. Pupils should estimate their own requirements from suitable data and keep memoranda on their own food consumption. The idea of constructing a diet from a variety of materials, each yielding variable proportions of certain nutritive essentials required in fairly definite amount, should be gradually developed.

This involves study of the composition of common food materials, making up lists or graphs showing relative amounts of a single constituent in portions of equivalent energy value, (e.g., 100 caloric portions).

Records of body weight may now be systematically kept by the pupil himself as a check on his dietary as well as other health progress.

The choice of food in public eating places may be made a means of considering standards of quality and their relation to cost, e.g.

1. Value and cost of cleanliness; e.g., cleaning of vegetables; Pasteurization of milk; careful dishwashing.

2. Value and cost of marketing (distribution); e.g., cost of transporting groceries from store to household; of milk from farm to city; of fresh fruit and vegetables, from South to North, or from Pacific coast to Atlantic.

3. Value and cost of service; e.g., the cafeteria or other self-service as compared with hired waiters; paper napkins as compared with clean linen ones.

4. Cost of rarity and waste; e.g., foods out of season as compared with the same in the local season; estimation of amounts of food left on plates and subsequently thrown away.

5. Cost of "notions" and fashions; e.g., color of eggs; large size and fine color in fruit.

Pupils may study what may most economically be chosen at a restaurant and what at home (e. g., it may be foolish to pay a restaurant's overhead in a banana when one can have it at home with no extra labor, while it may be worth while to buy baked beans, with less per calorie overhead in the restaurant and more labor at home). Each student should study his own food budget, considering not only market cost but home labor.

By the end of the ninth grade, pupils should be able to judge the energy value of most of the common items in their diet at sight with



fair accuracy and be able to select from a varied assortment of foods a rational meal and a day's ration which will insure an adequate diet at moderate cost. Studies of food value may center around the school lunch when this is a part of the school program.

#### SENIOR HIGH SCHOOL,

#### TENTH TO TWELFTH GRADES

Correlations will continue with civics, biology and sociology; others with chemistry and economics will be made.

In these grades there should be developed the idea of a well-balanced life—one of moderation and self-control. Food offers fine opportunity for self-restraint—e.g.

1. Resisting the temptation to eat at unsuitable times.
2. Refusing to drink tea and coffee because one knows them to be undesirable for the child.
3. Controlling one's purchase of candy and craving for sweets so as to keep the amount within hygienic limits.
4. Recognizing that appetite is not to be given full sway but that the quantities of any food consumed must be related to the body needs and the diet as a whole.

The detailed study of a single food material from its origin till actually eaten, taking into account time, labor and money involved in putting it into the hands of the consumer may lead to formation of ideals as to quality in all sorts of food—freedom from adulteration, false coloring, artificial flavoring, meaningless sophistication, etc.

The final test of ability is to put into daily practice without too much effort, a rational food program—evidence may be secured through the school lunch as well as by reports of food behavior at home and elsewhere.

#### NORMAL SCHOOL

The normal school teacher should be expected to know at least as much about food as the high school graduate. She should be expected to demonstrate in her own life that she can direct and control her appetite for the sake of her future as well as her immediate health. At intervals during training she should keep such records of her food habits as will show whether they conform to the best nutritional standards for her.

The normal school table should be a training table and the same attitude should prevail toward it as toward an athletic training table. It should be directed by a person competent to advise with the individual students about their own dietaries, and help to create standards as well as to manage kitchen and dining-room acceptably.

Study of the best educational methods in presenting the subject of food should be a part of her teacher training.

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## D. MOUTH HYGIENE

The relationship of the mouth to the general health may be stated from two viewpoints:

1. Mouth Hygiene. The importance of maintaining a healthy mouth with a full complement of teeth in normal occlusion so that the functions of mastication and insalivation of food may be properly performed, thereby promoting normal bodily health.

2. Oral Prophylaxis. The importance of preventive measures against decay of the teeth and diseases of the gums, because of the relationship of these conditions to chronic mouth infections (alveolar abscess and pyorrhea), which are in turn a menace to the general health.

### MOUTH HYGIENE

The teaching of mouth hygiene should be a definite part of the program of health education, both in theory and practice. In other words, the school program should be such that the child will not only be taught all of the things which contribute to the maintenance of a healthy mouth, but will also be trained in the actual performance. This teaching and training should constitute the mouth hygiene program. During recent years, schools have been established for the training of teachers of mouth hygiene—generally designated as dental hygienists, and twenty states have passed laws providing for the issuance of licenses to those who have been so trained.

The program of the dental hygienist should be incorporated into the program of health education. This program consists in the main of:

1. Classroom talks and stories intended to gain the interest of the children of the various grades and acquaint them with the importance of the healthy mouth.

2. The actual examination of each child's mouth and the cleaning of the teeth followed by a talk to gain the child's interest. The result of the examination is reported through proper channels to the family dentist, or to a special dental clinic.

3. Instruction in use of the toothbrush, by which the children are trained in the actual care of their mouths.

4. A check-up at stated intervals of the child's home care.

### ORAL PROPHYLAXIS

The teaching of oral prophylaxis may not be definitely separated from that of mouth hygiene. The child should be given to understand the importance of preventing as far as possible the occurrence of decay, also the prophylactic value of prompt reparative service when necessary. This is to prevent the involvement of other teeth by decay, to insure the best mastication of food, to prevent loss of the teeth, to prevent irregularities of the teeth and promote the development of normal facial contour, to prevent the occurrence of chronic infections which menace the general health.

It is, of course, of the utmost importance that actual reparative dental service be provided for those whose parents cannot afford to pay, or who can pay a little; this service to supplement the training in mouth hygiene. Each is necessary to the other.

### **The Facts of Oral Development and Care of Teeth, Which Should Help Determine the Appropriate Habits, Knowledge and Attitudes for Each Age Group**

Kindergarten (children under six years of age). During this period none of the permanent teeth have erupted. Both child and parents should be impressed with the importance of care of the temporary teeth because of the effect of disease of these teeth on the permanent teeth, especially in relation to irregularities of position. They should be taught how to keep the mouth and teeth clean and to form habits of thorough mastication. Unmasticated food is harmful and causes digestive, nervous and other serious disturbances which interfere with growth and development. Pain caused by cavities or an abscess also interferes with mastication.

Habits, such as thumb sucking, mouth breathing, abnormal nervous conditions, etc., may cause malpositions (irregularities of position) of the permanent teeth, impairing normal function and promoting diseases.

Normal development and eruption of the temporary teeth is followed by a further development of the jaws in preparation for the eruption of the permanent teeth. During this period most of the permanent teeth are in process of formation within the jaws.

Grades 1, 2, 3. The first permanent molar (the sixth year molar) is the most important tooth of all. It erupts behind the last of the temporary teeth and the proper position of these permanent molars (upper to lower) holds the jaws in proper relationship while the temporary teeth are shed and are replaced by permanent teeth. The loss of one first permanent molar may result in serious malocclusion (tooth irregularity) and facial distortion. The four incisor teeth (front teeth), upper and lower, also erupt during this period.

The temporary teeth are quite as likely to decay during this period as earlier. If these teeth have been neglected, the decays are likely to be deep, involving the pulps (nerves), often resulting in abscess formation, thus endangering both the health of the child and the growth of the permanent teeth, which lie within the bone just beyond the root ends of the temporary teeth, where the jaw bone is involved by the abscess.

The too early loss of the temporary teeth is likely to cause malocclusion (tooth irregularity) of the permanent teeth.

Cavities in the teeth harbor bacteria and are undoubtedly responsible for many serious infections.

Infections may be transferred from mouth to eyes and elsewhere, and from other sources to the mouth by placing of fingers in the mouth, as when wetting the fingers in turning pages. Usually the

fingers are placed in the mouth (except in thumb sucking) only because of some irritation in the mouth which should have attention.

Mastication cannot be normal with decayed or sore teeth. Often-times all the teeth of one side of the mouth will be thrown into disuse by a single cavity.

Grades 4, 5, 6. The remaining permanent teeth (except the wisdom teeth) erupt during this period—the bicuspid, second molars and cuspids. (The cuspids often do not erupt until the age of thirteen or even later.) Normal eruption of these teeth as to time and position, makes for normal mastication, and normal facial contour. Normal mastication and insalivation (mixing foods with saliva) of food are important to proper digestion. The shape and “character” of the lower half of the face are largely dependent upon the normal development of the teeth. The development of the maxillary sinus, with its relation to phonation, etc., is definitely related to the proper eruption of the teeth.

Grades 7, 8, 9. Eruption of all teeth (except “wisdom teeth”) is complete early in this period. Gum margins lose the fulness of early youth and there is a normal gradual recession for a period of possibly ten years. Cavities “between” the teeth occur most frequently during this period and the next.

Grades 10, 11, 12. Radiograms are likely to show an occasional abscess in bone at apices (ends) of roots of teeth that have been “treated.” Deposits of calculus (tartar) are often seen in slight amounts during this period causing inflammation of gum margins.

Normal School Age. At this age and throughout life about 50% of persons are shown by radiographic examination to have one or more dental abscesses. Pyorrhea is present to a limited extent during this period and both the percentage of persons having pyorrhea and the average number of teeth involved per person increases with increased age. Deposits of calculus (tartar) are more frequent and more extensive with advancing age. Decays of outer surfaces of teeth next to the gums occur during this period and are often especially destructive. These decays are not infrequent during and following pregnancy. Systemic diseases resulting from chronic mouth infections are more likely to occur with advancing years. The third molars (wisdom teeth) usually erupt at from 18 to 21 years, although occasionally later. These teeth are often impacted within the jaws and may cause reflex nervous disturbances or local complications.

### General Topics

#### RELATIONSHIP OF NUTRITION TO SOUNDNESS OF TEETH

The enamel of the teeth is fully formed before they erupt, and the dentin and other tissues are fully formed within from three to five years after eruption. Conditions of nutrition are most likely to affect the teeth during the period of their growth. It is uncertain whether defective nutrition changes the structure of the teeth after they are formed. Even if doubtful, it is reasonable to suppose that they will

benefit from conditions which favor good bone development; i.e., a liberal supply of mineral constituents and vitamins in the diet.

However, it is quite likely that defective nutrition may result in caries of the teeth through its effect upon the saliva. It has been quite well established that caries of the teeth is due to environment, namely, the condition of the saliva and other secretions within the mouth. It is quite natural to suppose that faulty nutrition may so modify the saliva as to make one more susceptible to caries.

### THE IMPORTANCE OF CLEANLINESS

The attention given recently to the effect of nutrition upon soundness of teeth has sometimes raised the question whether cleanliness is as essential in preserving the health of the teeth as has been thought. There can be little doubt, however, of the importance of cleanliness in the prevention or retardation of dental caries. The best example of this on a large scale is the work in the Bridgeport, Connecticut, public schools, where their statistics show that for children reaching the 6th grade, the number of decays in the teeth have been reduced about 50% as a result of the most thorough mouth cleanliness.

### PRENATAL CONDITIONS

Only the temporary teeth are in process of formation previous to birth. The beginning formation of the permanent teeth occurs at about the time of birth. It is not, therefore, to be expected that defective formation of permanent teeth would be a direct result of prenatal conditions.

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## E. HYGIENE OF THE EYE

Eye health is desirable because of the enormous industrial and social importance of good sight; because the eye is the principal avenue to the mind in education; and because, under the visual requirements of civilized life, eye strain may lower the general health and efficiency of the individual.

To keep the eyes healthy they must work under proper conditions, and must be rightly used.

Proper conditions require:

1. Sufficiency of light falling in the proper way on the thing looked at and not on the eyes.
2. Correction of faults of focus by glasses, for all eyes that need them.
3. Limitation of eye work as to time, rest periods, fineness of print and general minuteness of things to be seen.
4. Good nutrition, so that vision shall not exhaust the supply of prepared nutriment required by the rapid changes in the nerve cells used.

The right use of the eye means:

- (a) Maintaining the right position with regard to the main source of light.
- (b) Keeping the object looked at far enough from the eyes, so that they look at one point and the strain of focusing them and turning them in is avoided.
- (c) Frequent (brief) periods of rest, from looking at objects that are close to the eye or difficult to see.

Proper conditions are secured by:

1. Attention to planning and fitting windows and light fixtures; and placing the pupil in the right position as to the light.
2. Testing the vision and focus of the eyes. This may be done by a trained teacher or principal, but is best done by school physicians, who have special training regarding such tests. After the tests are made glasses should be secured for those who need them.
3. Supervision to enforce the conditions of lighting, fineness of work, duration of tasks, observance of proper methods of using the eyes.
4. Maintenance of general health.

Teaching how to use the eyes should begin in the lowest grade. This teaching should:

1. Show that it is easier to see with the light shining on the thing looked at, rather than shining in the eyes; and that bringing small

objects too close to the eyes causes discomfort and a sense of increased effort.

2. Call attention to all departures from proper position as to light and book; pass judgment on books, exercises, positions, lighting arrangements by the principles taught; establish habits of seeking right conditions and practicing right methods.

In secondary schools the essentials of right conditions and use of the eyes may be somewhat elaborated. Cautions should be given about avenues of infection, and the significance of pain, redness or discharges from the eyes pointed out. Pupils should learn about the dangers from certain forms of injury by blows, toy guns and explosives.

In high schools, something of the structure and workings of the eye may be taught, with illustrations from a camera. The effects of deficient or excessive light, the dangers of developing myopia and causing degenerative disease by improper use of the eyes, and the dangers to vision from certain poisons and occupations may be taught.

In the training of teachers, in addition to full training with regard to the things to be taught in the grades, there should be emphasized the dependence of the great body of school work on good sight; the influence of eye strain on general health, especially its effects in causing headache, loss of appetite, let down in school interest and energy; and the methods of recognizing the signs of eye defect or disease.

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## F. PHYSICAL EDUCATION

### The Contribution of Physical Education Activities to Health

The beneficial effects of exercise are commonly conceived as lying chiefly in the development of muscles. The most significant contribution of rational exercise to bodily health, however, is the effect in developing the organs of the body. In fact, exercise is the best known means by which we may effect such development.

#### BENEFICIAL EFFECTS OF MUSCULAR ACTIVITY UPON PHYSIOLOGICAL WELL-BEING

1. Circulation is increased throughout the entire body, or through the part exercised. This circulatory activity increases carriage of food to the tissues, removal of wastes, distribution of the endocrin secretions and equalization of the water and heat content of the body.

2. Big muscle activity increases the demand for oxygen, and thus causes an increased respiratory activity, with the resulting increase in the rate of oxygenation of the blood, increased rate of elimination of the carbon dioxide, and increased oxygen supply to the tissues. This increased respiratory activity is the result of the demands made by the exercise; and deep breathing without the bodily exercise will not have the same results. During increased activity the respiratory apparatus naturally responds by frequent and deep respirations.

3. Exercise stimulates the excretory system, and increases the elimination of waste through kidneys, lungs, intestines and skin.

4. Digestion is improved and assimilation is accelerated by exercise. Digestion is not only a chemical but a muscular process. If the musculature of the alimentary canal is flaccid, digestion is retarded and impeded. Peristaltic movements are more vigorous when the muscle tone of the alimentary canal is good. Exercise is essential in keeping the muscles in good condition. The constipation resulting from sedentary life is in large part due to inadequate muscular activity.

5. Big muscle activity stimulates growth, and for the growing child is absolutely essential.

6. The heart is strengthened by the exercise of the skeletal muscles of the body. The best known way in which some types of weak heart can be made strong is by gradual and increasing amount of physical work of the skeletal muscles. Exercise for the person with a weak heart should be arranged by skilled specialists; it should not be prescribed by any untrained person.

7. The muscles of the body are directly developed by physical activity. This is of great importance for health as regards the

muscles of the trunk; the abdominal muscles must be in good condition for the maintenance of the upright posture which is necessary for the best position and functioning of the abdominal and pelvic organs; and therefore of great importance for health.

8. Rational exercise results in increased neural activity, and in neuro-muscular control, which develops skill, accuracy, endurance, agility and strength.

#### THE EFFECT OF MUSCULAR ACTIVITY UPON HEALTH OF PERSONALITY: MENTAL, EMOTIONAL AND SOCIAL HEALTH

The preceding paragraphs have dealt with only the immediate and physiologic results of physical education activities. Equally important are the assets and the qualities of personality which may be fostered by physical education. These outcomes of physical education contribute to health in personality. For example, a list is given here of the assets which should be outcomes of one type of athletics—team games.

*Social Assets:* Coöperation, courage, sportsmanship, leadership, loyalty.

*Physical Assets:* Motor control, muscular strength, vigor and endurance.

*Mental Assets:* Initiative, originality, resourcefulness, ability to form quick and accurate judgments, ability to respond to commands.

*Emotional Assets:* Enthusiasm, control of excitement, control of temper.

This discussion so far has proceeded as if all types of activities contributed uniformly to health. This is not the case. Physical education activities fall into the following groups:

- |                     |                                     |
|---------------------|-------------------------------------|
| 1. Athletics        | 4. Group Games                      |
| (a) Team Games      | 5. Gymnastics                       |
| (b) Track and Field | (a) Formal                          |
| 2. Ability Tests    | (b) Natural                         |
| 3. Dancing          | (c) Story Plays                     |
| (a) Folk            | (d) Posture Training                |
| (b) Gymnastic       | (e) Individual Corrective Exercises |
| (c) Natural         | (f) Apparatus                       |
| (d) Rhythmic Play   | 6. Stunts                           |

The contributions of these types vary both in kind and degree. Roughly speaking, games and sports, and athletics afford the best type of exercise, both in respect to physiological effects, and to the possibility of a constructive contribution to the formation of social qualities, desirable in a democracy.

Study of Chapter III, The Meaning of Health, will show that physical education activities may make a considerable contribution to the majority of the items mentioned there.

#### The Relation of Physical Education to Health Education

The fields of physical education and health education are not identical. There is much health training and instruction, for example, relating to nutrition, which is not properly a part of physical education activities. On the other hand, physical education is considered by some, including many teachers in this field, to include aims and

objectives, intellectual and social, which belong to education as a whole and are not primarily included in a program of health education.

Physical education activities are presented in their relationship to the whole health education program and no attempt is made here to set up a complete program of physical education.

One of the most important interrelationships of physical education with other aspects of health education is in the psychology of motivation. It is an important and striking fact that children, in order to be "fit" to take part successfully in games and sports, will observe all rules of health. The college athlete in training is the familiar example of this.

### Underlying Principles

The individualistic tendency of the young child must be taken into consideration in planning his activity program. It should always be possible for him to carry his play to the point of satisfaction by himself or with as small an amount of dependence upon someone else as possible. His span of attention and interest is comparatively short, and he easily becomes discouraged; consequently it should be possible for him to reach the point of satisfaction quickly and without too great an effort.

As he grows older he grows more gregarious and should have an opportunity to play with the gang and feel that he is one of them. At this time, up to junior high, he is not a socially inclined being except with his chosen few and should not be expected to play from any altruistic motives, or to have much consideration for anything or anybody outside of his whole-hearted activity. This activity can lead with equal ease into destructive or constructive channels and at this period—grades 4, 5 and 6—the wisest and most sympathetic leadership is needed. At least up to and including the 6th grade the movements necessary in any game should be of the big fundamental type and should not need careful adjustment of the child to any piece of apparatus. Two extremes along this line are kicking a football and driving a golf ball.

In the 7th, 8th and 9th grades the social qualities are more developed and the type of games changes toward higher organization and more concerted team play.

As we grow still older the element of skill is increased, as in tennis and golf.

There is great similarity in lists of games for junior and senior high schools but the degree of skill differs and the method of teaching is far less detailed for the younger group.

Throughout the whole of life (under normal conditions) rational exercise is essential. It is therefore necessary in childhood and in youth to establish habits of rational physical activity, and even more important, to create such an interest in and enjoyment of those activities that in adult life the individual will arrange his daily schedule



to include a desirable amount, even at the cost of some effort and planning.

### How These Principles Apply in Determining the Activities Appropriate for Each Age Group

This committee believes that the following activities for different age groups are most likely to have the desired results:

#### A. KINDERGARTEN, GRADES 1, 2 AND 3

1. Free activities indoors.
  - (a) Construction activities (1) play with large blocks, (2) construction with wood; sawing, boring, pounding, planing, (3) blackboard and easel drawing and painting, (4) modeling with plastic materials.
2. Indoor games.
  - (a) Dramatic play.
  - (b) Rhythmic play.
  - (c) Organized games (1) traditional or folk games, (2) original games, (3) competitive games; ball, bean bag, nine pins, hoops, races.
3. Out-of-door activities.
  - (a) Free play on apparatus; turning bars, balance beam, swing, teeter, sand pile.
  - (b) Free bodily activity or play activities; running, jumping, hopping, skipping, walking, calling, shouting, singing, dancing, throwing, striking, catching, tossing, swinging, pushing, pulling, carrying, climbing.
  - (c) Organized games (traditional or group) including ball games, tag games and other forms of traditional or group games.
  - (d) Nature plays (1) with wind; kites, pin-wheels, racing with wind, (2) with sun; shadows, reflected light, (3) with water; wading, splash-ing, boats, water-wheels, dams, swimming, fishing.

#### EQUIPMENT

##### Play room

Large floor space  
Piano  
Gymnasium mats  
Horizontal poles of 3 heights  
Many large light balls  
Jumping standards  
Balance beams  
Box  
Stall-bars

##### Play ground

Large play space  
Sand pile  
Horizontal poles of 3 heights  
Many balls to kick and throw  
Swings  
Teeters  
Trees and shrubbery

#### B. GRADES 4, 5 AND 6

1. Ability tests.
2. Athletics.
  - (a) Track and field events:
    - 25- and 50-yard dash, broad and high jump; throwing balls for accuracy and distance.
  - (b) Team games:
    - Soccer; volley; progressive dodge ball; bombardment; club snatch; patch ball; schlag; side kick; corner ball; end ball; bat ball.
3. Dancing.
  - (a) Folk
  - (b) Gymnastic
  - (c) Natural

## 4. Group games and relays.

Three deep; day and night; run, sheep, run; pom pom pull away; mid-night; black and white; whip tag; pinch ouch; stealing sticks; bull in the ring; sling the monkey; broncho tag; sock ball; singing games; relays (flag relay, club snatch, all up relay, corner spry).

## 5. Gymnastics

- (a) Formal
- (b) Natural
- (c) Posture training
- (d) Individual Corrective Exercises
- (e) Apparatus

## 6. Hiking

## 7. Swimming

## 8. Stunts

## EQUIPMENT

## Gymnasium

Large floor space  
 Piano  
 Gymnasium mats  
 Many large inflated balls and soft indoor base balls  
 Basket ball goals  
 Jumping standards  
 Chinning bars  
 Horizontal ladder  
 Climbing ropes

## Play ground

Space enough for team games to be played without preventing other activities.  
 Triple chinning bar  
 Many soccer and indoor base balls  
 Jumping pits  
 Jumping standards  
 Horizontal ladder  
 50-yard running track

## C. GRADES 7, 8 AND 9, BOYS

## 1. Ability tests

Ability tests are probably worth more in these grades than below because the habits of individual effort are better established and experience and knowledge have developed more ability. The attitude resulting from greater interest also enters here.

## 2. Athletics

## (a) Track and field:

60-yard dash; short relays (no endurance runs); all jumps; shot put; low hurdles

## (b) Team Games:

Soccer; volley; speed ball; indoor base ball; basket ball; base ball; tag foot ball; tennis

Team games make the strongest appeal in these grades and the attitude of the children and teachers is of the greatest importance as the assets and abilities which are possible outcomes of these events can be entirely lost unless the attitude is right. Knowledge of rules and the development of habits of fair play are also of the greatest importance if good results are to be secured.

## 3. Dancing

## (a) Folk

Only the very vigorous types of folk and gymnastic dancing are suitable for boys of this age and should have the dramatic element accentuated rather than technique.

## (b) Gymnastic

## 4. Group games and relays

Sheepfold; baste the bear; hang tag; hunting tag; three deep; ducks on rocks; prisoners' base; fox and geese; hare and hound; tip cat rider ball; crackabout; spuds; relays (obstacle relay, wheelbarrow relay, potato races; arch goal ball, jumping relay, hopping relay).

Boys in these grades like to originate their own group of mass games and through working out the rules and regulations the underlying principles of social assets can be discussed and applied to life situations.

5. Gymnastics
  - (a) Formal
  - (b) Individual corrective exercises
  - (c) Natural
  - (d) Posture training

Knowledge of the value of these types of exercise ought to secure to a greater degree the desired assets and abilities. The attitude toward the work and the habits formed would determine the results.

6. Hiking
7. Swimming
8. Stunts

### EQUIPMENT

See equipment for preceding group, with addition of 100-yard running track for older boys, and of eight-pound shot, vaulting pole and tennis equipment.

#### D. GRADES 7, 8 AND 9, GIRLS

1. Ability tests

Ability tests are probably worth more in these grades than below because the habits of individual effort are better established and experience and knowledge have developed more ability. The attitude resulting from greater interest also enters here. Tests should be for variety of physical accomplishment, including dancing, rather than for endurance or supreme effort.

2. Athletics

- (a) Track and field:

50-yard dash; short relays; running high, standing broad jump; low hurdles; throwing balls for distance and accuracy. Stress form and variety rather than record making and specialization.

- (b) Team games:

Field ball; schlag; volley ball; end ball; corner ball; bombardment; indoor baseball; pin ball; drive ball; tennis.

Team games make the strongest appeal in these grades and the attitude of the children and teachers is of the greatest importance as the assets and abilities which are possible outcomes of these events can be entirely lost unless the attitude is right. Knowledge of rules and the development of habits of fair play are also of the greatest importance if good results are to be secured.

3. Dancing

- (a) Folk
- (b) Gymnastic
- (c) Natural

4. Group games and relays

Sheepfold; animal chase; prisoners' base; three deep; broncho tag; cross tag; follow tag; run, sheep, run; day and night; hare and hound; relays (potato relay, chariot relay, criss cross, base ball relay).

5. Gymnastics

- (a) Formal
- (b) Individual corrective exercises
- (c) Natural
- (d) Posture training

Knowledge of the value of these types of exercise ought to secure to a greater degree the desired assets and abilities. The attitude toward the work and the habits formed would determine the results.

6. Hiking
7. Swimming
8. Stunts

Should be selected on same basis as ability tests. Flexibility should be preserved and the ability to hold an upside down position.

### EQUIPMENT

See equipment for preceding group; add tennis equipment.

## E. GRADES 10, 11 AND 12, BOYS

The list of activities given for grades 7, 8, 9 boys should be used with a few additions, the difference being in the method of teaching and the degree of skill reached by the boys. Add football, golf and ice hockey. A small group of older boys is apt to be interested in becoming skillful in handling themselves in relation to apparatus, such as parallel bars, horse, buck, flying rings, etc.

## EQUIPMENT

Municipal courts, golf courses and hiking and camping privileges should be made use of as much as possible, as well as whatever advantages the school can offer. Fullest use with safety should be made of all outdoor opportunities for action.

## F. GRADES 10, 11 AND 12, GIRLS

The list of activities given for grades 7, 8, and 9 girls should be used with a few additions, the difference being in the method of teaching and the degree of skill reached by the girls. And field hockey, tether ball, baseball, golf and basket ball.

## EQUIPMENT

Municipal courts, golf courses and hiking and camping privileges should be made use of as much as possible as well as whatever advantages the school can offer.

## G. TEACHERS IN TRAINING

Teachers in training should have a working knowledge of all the activities listed in all of the groups. This should include not only the skill and abilities required for good performance but also the rules and regulations and source knowledge. They should have training and practice in handling all sizes and conditions of groups in all forms of activities. This is a working knowledge and is quite different from performing ability.

Teachers in training should meet the following standards:

1. Should spend at least one hour daily in out-of-door play.
2. Should know how to play all games previously listed.
3. Should be able to take self-corrective exercises on own initiative; should understand the value of good posture and hold it habitually and be able to help others assume it.
4. Should be more interested in group and special forms of out-of-door activities than in individual contesting and record-breaking events, and be able to teach others and be leaders in all play activities.
5. Should enjoy and originate rhythmic expression and be able to help others in rhythmic expression.
6. Should see the character building and social training possibilities in games and sports and be ready to use them for others.
7. Should live by the "Rules of the Health Game" and appreciate their value; should appreciate need for community hygiene, community recreation and all community welfare.

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## G. EDUCATION FOR PARENTHOOD AND SOCIAL HYGIENE

NOTE: This material in large part was taken from "The Teachers Part in Social Hygiene," a report of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, in coöperation with the American Social Hygiene Association.

One of the most important parts of any health movement is the attempt to improve the race itself. A health education program, to be most constructive, must be far-sighted enough to make and use all possible opportunities which tend to make a progressively better human race as time goes on.

"Social hygiene has as its general purpose the perpetuation of the family as a social unit in such a manner that it will contribute in the largest way to the happiness and usefulness of its individual members, and to the best development of the human race."

The improvement of the race is not a remote or a distant problem, which concerns only the eugenic societies. It is the immediate pressing problem of every parent, and a proper matter for the concern of every citizen. On the whole, public schools, colleges and universities alike have given scant attention to education for parenthood. There are evidences, however, that in departments of home economics, in biology and eugenics courses in the colleges, and to a lesser extent in the high schools, this need is being more adequately met than in the past.

### What Does Education for Parenthood Involve?

"The first requirement in the work of educating the individual to a right attitude toward citizenship and parenthood is a comprehension of what is meant by the 'sex factor' in life. The sex factor means that the human world is made up of boys and girls and men and women, and that all human beings bear relations toward each other which grow out of the fact that they are men and women and boys and girls.

"Education for citizenship and parenthood means that these human relationships must be rightly seen and rightly understood, and that through a correct understanding of them, boys and girls must be fitted to be constructively intelligent parents of desirable children in desirable homes."

Education for parenthood begins in infancy. This does not mean that the child is conscious of the fact that he is being educated to be a desirable—or too often an undesirable—parent.

It does mean that the child is recognizing in babyhood that there are differences in human beings, that father and mother are two dif-

ferent persons, and two different kinds of persons, that brother is not the same kind of a person as sister. The very young child knows whether he or she is a boy or girl. The first curiosity the child shows in the matter of sex is in regard to obvious bodily differences between the two kinds of beings in the world, the reasons why he is called a boy and sister a girl. Such information is never acquired as isolated intellectual facts; it is always accompanied by attitudes. They may be wholesome attitudes of normal matter-of-fact understanding and true modesty, or they may be unwholesome attitudes of abnormal, injurious, ashamed self-consciousness or excessive curiosity. It lies largely within the parents' power to determine which will be the fate of their children.

It is well for the child, and consequently for society, if the simple facts and far more important implications of human reproduction are imparted to the child before school days begin, and parents should appreciate the importance of this privilege and task.

In early school years this knowledge should be richly supplemented and enlarged through nature study. On page 105 are discussed other school activities through which the young child may gain useful knowledge and establish attitudes of social value in his education for parenthood.

Even more important than the knowledge which the child acquires is the quality of his social relationships.

During the grade school period, there should be a careful avoidance of everything that can stimulate the feelings which rightly belong to another period. The average grade school child prefers companions of his own sex, but very desirable friendships between boys and girls are not uncommon. They should be carefully kept on a wholesome plane by treating them as wholesome and natural things. Any teasing or talk of "sweethearts" is to be entirely condemned, for no child should ever be forced to a plane of feeling beyond his years. Matter-of-fact acceptance of comradeships is wholly desirable at this period.

Not only should the child be guarded against embarrassment but sex antagonism should not be aroused. It is not wise to put boys against girls in the schoolroom, nor to separate the boys' work from the girls', for this is calling attention to differences which do not need to be brought to mind. The teacher should never "call on the girls" when none of the boys can answer a question, nor make the unruly boy "sit with a girl."

This is more than a negative principle. It is important that boys and girls should hold those same standards of honesty, fair play, courtesy, truthfulness and helpfulness toward members of the opposite sex as toward their own sex. Both boys and girls should come to understand that there is no antagonism in their interests; that they can be friends only while they have the same standards of ideals and behavior.

"In the work of inculcating the right attitude toward family life and parenthood in boys and girls of grade and high school age, their natural reticence must be taken into account, and indirect teaching given impersonally. It is less wise to impress on boys and girls that they, individually, will be parents, than to talk of the wide responsibilities into which boys and girls in general will grow. Both boy and girl must be made to feel that right living, right thinking, are not mere personal matters. Boys and girls are responsible not alone for their own behavior but for the behavior of their mates, for the repute of the school, for the honor of the community, for the future of the nation. This is a point to be insisted upon, bearing in mind that a feeling of responsibility must not be permitted to degenerate into priggishness. It must be made responsibility of team play, a group feeling, strong in each individual member.

"Toward the end of the grade school period and well before the oncoming of adolescence, both boys and girls must be prepared for the physical, mental and social changes of the period. The boy and girl who has been taught to look upon bodily changes as matters of course will pass through this critical period without self-consciousness and without acquiring false ideas."

The specific knowledge which high school boys and girls should have in their preparation for parenthood may be given in courses of biology, home economics and applied science.

By the time the young man and woman are ready to enter college, they should have such a background of knowledge, and should have developed such a sense of social responsibility that they may be held responsible for a high quality of behavior in all their social relationships, which affect their own present well-being or the well-being of their children.

Certainly one of the most important results of a college education should be the increased ability to rear children wisely, to understand their needs and to guide their development. Every child has the right to be well-born, and the very foundation, of course, is the wise selection of the husband or wife who is to share in the partnership of marriage and parenthood. The securing of these results involves knowledge of eugenics, of child physiology and psychology and of the healthful environment and regime of living which should be the child's.

To sum up, education for parenthood is a continuous process, which, whether we like it or not, begins in babyhood and never ceases. It lies within our power to determine what sort of education it is. It is a broad, comprehensive process, to which many experiences contribute; intellectual, social, emotional. On the intellectual side, both for men and women it should embrace a knowledge of fundamental life processes, of the important characteristics and needs of children, of the economic and social problems of family life, and of the social significance of the family in contemporary life and for the future of the race. It should include the formation of such social and emo-

tional habits and attitudes as will insure the practical application of the highest ideals.

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## H. MENTAL HYGIENE

It has been repeatedly emphasized in this report that health education is concerned with the mental, emotional and social health of the child, as well as with his physical well-being. What is meant by mental health? A description of the healthy personality is given in Chapter III. How can the teacher help her pupils to attain these standards?

There are two fundamental hypotheses, which are important from the teacher's point of view.

First, in the great majority of cases, "People are not born this way (mentally abnormal); they are made this way. The foundations of these types of personality are laid in childhood. One forms mental habits as one forms physical habits. Some are good and some are bad. We take great care in helping the child form good physical habits, but we are inclined to neglect almost entirely the emotional habits, the child may develop, although so far as the happiness of the child and its future success in dealing with others is concerned, these are probably more important. Every waking hour the child is reacting emotionally to situations that arise in its environment—in the school, in the home, and on the playground. Through these experiences it forms emotional habits—ways of meeting unpleasant situations, ways of looking at things, ways of feeling about things. These habits tend to become fixed, and if they are bad habits, they lead in adult life to much unhappiness and inefficiency, such as you and I find in our lives because no one helped us in these matters when we were children, or to the warped and twisted and odd personalities about which we have spoken. Sometimes they lead to nervous and mental breakdowns." (Mental Hygiene and Childhood, by Frankwood E. Williams, Medical Director, The National Committee for Mental Hygiene.)

Second, prevention of mental abnormality must begin in childhood if it is to be successful. We read of people who "went suddenly insane," but no one ever went suddenly insane. There is always a history, often reaching back into childhood, of peculiarity; shy, retiring self-seclusion; emotional instability; little peculiarities which were disagreeable enough, but which no one considered serious.

There are important applications of mental hygiene which should be made to the school. It would be desirable to have a complete examination of every school child upon school entrance, this examination to include the child's mental as well as his physical health. This is a goal that is far from being realized, but there are still many things which teachers can do. A few suggestions are given:

1. Teachers should help their pupils to acquire emotional control, and should avoid any course of action which will arouse undesirable



emotions. Children should never be frightened; a childhood fright may become the basis for an adult psychosis. Children should not be ridiculed, shamed or embarrassed; a child's fear of ridicule may be so intense as to paralyze effort. There should be a calm, orderly atmosphere in the school-room which avoids both undue restraint and emotional excitement.

2. Help the shy, easily embarrassed child to overcome his bashfulness and emotional disturbance, so that he may carry on his work and play with other people more happily and efficiently.

3. Teachers should help their pupils to establish habits of intellectual honesty; to meet problems squarely and not to dodge the issue.

"Children should not be lied to concerning important matters, especially about the matter of sex. The lying and deceit are soon discovered, and the experience is exceedingly bad for the child. Much of the unhappiness, worry, and failure at school, and the nervous illnesses of young adolescents, as well as the nervous and mental breakdowns of later life, are due to the misunderstanding of these matters that has been brought about by the lying and deceit of others. It is of very great importance that this be avoided. The questions of a child along these lines should be answered honestly and without embarrassment, in accordance with the ability of the child to understand." (Mental Hygiene and Childhood, Frankwood E. Williams.)

4. The habit of concentrating on the present task is one which should be encouraged. Teachers should help their pupils to learn how to work successfully and efficiently. A certain amount of physical and mental work is healthful. Much unhappiness and mental distress come both to children and adults, from inability to work successfully.

5. Children should be encouraged to find a real solution to each problem that faces them, to meet their problems by activity instead of day-dreaming. The day-dreaming is not harmful if it issues in activity, but excessive day-dreaming which leads nowhere is undesirable.

6. The teacher should make every effort to keep the child from developing a feeling of inferiority. Every child should have a chance to succeed at something; constant failure establishes the habit of failing, and an almost insurmountable obstacle of discouragement or indifference. Teachers should adjudge success upon a basis of effort and improvement as well as natural ability, and achievement.

7. Encourage activities which inherently emphasize the desirable qualities, e.g., co-operative sports, school papers, student government, civic activities, hobbies, development of special talents and abilities, scouting activities.

8. Encourage socially useful activities, and the development of interest in other people's welfare.

9. The adolescent age is characterized by a combination of emotional instability and increasing independence which often results in what appears to be perfectly unreasonable behavior. It is worth the teacher's while to attempt to understand all such occasions, and her-

self to be not only reasonable, but intelligently constructive in dealing with her pupils at such times.

To sum up, habits of truthfulness and honesty, cheerfulness, unselfishness, helpfulness, sociability, courage, persistence and resourcefulness should be among those most emphasized.

Applied to health education activities, this means that:

1. Selection of subject matter should emphasize the wholesome, objective aspects of health rather than the introspective, pathological or morbid.

2. Activities should be conducted so as to obtain the most desirable by-products in attitudes and emotional habits. "Whole-hearted, purposeful activity carried out in a social environment," i.e., the "project method," promises to be one of the most healthful ways of carrying on school activities.

3. A part of every teacher's preparation should be such study of child psychology and physiology as will help her to understand her pupils.

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Very helpful material in brief form may be obtained from:

The Massachusetts Society for Mental Hygiene, 5 Joy St., Boston, Mass.

The National Committee for Mental Hygiene, 370 Seventh Ave., New York City.

## I. ACCIDENT PREVENTION

Why have we accidents? The answer to this question is simple. Conditions in the world have changed; moreover they have changed so rapidly in the last quarter of a century that human intelligence has not kept pace with the transformation. A simple illustration of this change may be noted in street congestion and hazards. As late as 10 years ago it was perfectly safe for the pedestrian to cross the street where he chose, even to walk down the middle of the street, reading a newspaper without danger to himself; for the main traffic upon the streets was horses and carriages. Horses, generally, have intelligence enough not to run over people, and the rate of motion of vehicles in those days did not create hazards. The conditions of 10 or 15 years ago have so changed that no one is safe on the street who does not give attention to the particular ways of crossing, and to action in general, necessary to avoid accidents.

Another example of the accident producing changes which have taken place in recent years is the development of steam and electric railroad transportation together with the extensive use of automobiles. Speed has become one of the most important aims in transportation; automobiles are rapidly supplanting all slower moving vehicles; rapidly moving trains and speeding automobiles are constantly crossing each other's paths, and frequently meeting in disastrous collisions. The means of evading accidents, particularly at railroad crossings, are those which were developed at a time when trains moved much more slowly and the danger of collision was present only with pedestrians or horses and carriages.

The customary signs—"Stop, Look and Listen"—were all right in those days of the horse-driven carriage, but with the auto they are inadequate. The motorist going at the rate of 30 to 40 miles an hour dislikes immensely to "stop." The operator driving his car has a thousand things to "look" for; and with the noise of the motor and conversation with his family, he is not in a favorable position for "listening" to moving trains. In other words, the signs at railroad crossings are inadequate to check the motorist in his effort to get somewhere. Examples of other hazards may be mentioned, such as the use of electricity (the silent hazard), the universal use of gas, bringing with it the danger of asphyxiation, and the many hazards of industrial occupations. The hazards from these sources have become so serious that accidents have climbed at an enormous pace, resulting in nearly 80,000 deaths and 2,000,000 serious injuries last year in the United States.

The seriousness of the deaths and injuries from accidents in this country may be made clear by an estimation of the fatal accidents

per week and per day in the continental United States for 1920 and 1921.

<i>Type of Accident</i>	<i>Deaths Per</i> (1)			
	<i>Week</i>		<i>Day</i>	
	1921	1920	1921	1920
Total accidents .....	1,410	1,453	201	208
Traumatism by fall .....	236	240	34	34
Automobile accidents .....	236	212	34	30
Accidental drowning .....	151	116	22	17
Burns .....	122	155	17	22
Railroad accidents .....	122	149	17	21
Absorption of irrespirable or poisonous gases .....	64	69	9	10
Traumatism by firearms .....	54	53	8	8
Traumatism in mines .....	41	51	6	7
Injuries by other vehicles .....	39	39	6	6
Traumatism by machines .....	37	51	5	7
Street car accidents .....	33	41	5	6
Excessive heat .....	23	6	3	1

This data becomes even more significant when the death rates per 100,000 population in the United States Registration area for 1921 are compared with those in England and Wales.

<i>Crushing Accidents</i>	<i>U. S. Registration States, 1921</i>	<i>England and Wales, 1921</i>
Total crushings .....	215	92
Railroad accidents .....	59	13
Automobile accidents .....	114	45
Street car accidents .....	16	2
Other vehicular accidents .....	19	23
Aeroplane accidents .....	1	2
Other crushings, not specified above .....	6	7

The significance of the seriousness of accident hazards to the educator becomes obvious from the following table which gives the age distribution of principal types of accidents in the United States for 1921.

(Tables 1, 2, 3 are taken from The Warning of Public Accident Statistics, published by the National Safety Council.)

								(3)
								Absorption
								of irre-
								spir- Trauma-
								able or tism by
								poison- fire-
								ous gases arms
Age	All acci-	Trauma-	Auto-		Rail-	Acci-		
Periods	dents	tism	mobile		road	dental		
		by fall	acci-	Burns	acci-	drown-		
			dents		dents	ing		
All ages	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 5	12.7	5.4	7.8	46.2	2.0	8.6	28.6	4.5
5 to 9	7.3	2.5	16.0	12.1	2.1	10.4	1.6	7.8
10 to 14	5.2	2.2	7.5	3.2	3.1	12.5	1.6	14.2
15 to 24	13.2	4.5	11.6	6.1	16.8	30.3	5.6	33.8
25 to 34	12.6	5.3	12.4	6.8	20.5	14.0	10.0	16.6
35 to 44	12.0	6.6	12.1	6.0	19.5	10.3	12.2	10.5
45 to 54	10.2	7.8	11.1	4.8	15.2	7.0	12.5	6.2
55 to 64	8.6	9.6	9.6	4.8	10.0	4.0	11.5	3.9
65 to 74	7.8	15.0	8.1	5.0	7.6	1.8	8.9	1.6
75 & over	10.3	41.0	3.8	5.0	3.3	1.1	7.4	.8



There has been a gradual decline in the number of injuries and deaths to children of the elementary school age from 6 to 16 since 1918 when the first systematic safety work was introduced into the schools with the introduction of a complete plan of safety instruction in the schools of St. Louis. This decline has been noted in the Census Bureau reports and in the reports of the Metropolitan Life Insurance Company. It is remarkable that the response in reductions should be so immediate and in direct connection with the spread of safety education in the schools in different parts of the country. Every city which has introduced safety education into the schools has shown a reduction from 20 to 60 per cent. The most recent achievements are in Washington, Cincinnati and Kansas City. A recent unpublished report of the record from March 1 to December 31, 1923, issued by the Bureau of Public Safety of New York City, indicated further the seriousness of accidents to children of elementary school age and the need of immediate action on the part of school people. The following table (4) shows the accident causes and number for children 6 to 16 years of age.

Deaths and Injuries from Street Accidents to Children, 6 to 16, New York City, March 1 to December 31, 1923.

	Killed	Injured (4)
Crossing streets not at crossing.....	184	3,583
Crossing streets at street crossing.....	40	1,274
Playing games in the roadway.....	56	1,865
Running off sidewalk into street.....	31	677
Stealing rides on vehicles.....	19	431
Roller skating, coasting, etc., in roadway.....	11	207
Bicycle riding carelessly .....	10	522
Collisions of vehicles .....	3	622
Jumping on or off cars, etc., in motion.....	1	147
Other causes .....	19	504
Falling over obstacles or into excavations.....	1	145
Climbing trees, poles, fences, etc.....	66	227
While at play .....	7	155
Other causes .....	302	10,425
Total.....	750	20,784

Now, what is most significant about these accidents is the fact that they are preventable. This has been shown in a number of ways. In the numerous Safety Weeks that have been carried out in different parts of the United States there has been a uniform reduction and in some cases an entire elimination of accidents during the week. Why? Not because of a lessening of traffic congestion; not because of actual elimination of the hazards; but simply because people were led to be careful during Safety Week. Not only have reductions taken place during these weeks but there has been a steady decline of accidents in industries, on the streets, and in the homes of those communities where competent, organized safety effort has been made. For instance, in St. Louis the number of accidents causing death was reduced from 510 in 1917 to fewer than 300 in 1922, a saving of more



than 200 human lives per year and millions of dollars in property value.

The most remarkable accomplishments, however, have been made in saving the lives of children through safety instruction in the public schools. A dozen cities could be pointed out in which great reductions in the loss of children's lives have taken place—St. Louis, Detroit, Milwaukee and others. In St. Louis, where an average of 50 children, 6 to 16 years of age, were killed by accidents yearly during a recent 10-year-period, this death list was reduced to 20 in 1920; to 16 in 1921, and to 5 for the first half of 1922.

The reduction of injuries and deaths from public utility accidents was even more marked. In the years 1917, 1918 and 1919 there were a total of 40 deaths to school children and 1,000 serious injuries from this class of accidents. After a study of the causes of accidents and systematic endeavor on the part of the schools to train children to avoid such accidents the number was reduced to a single death in 1920, and during the years 1921 and 1922 not one school child was killed in a public utility accident. Numerous other instances of like reductions could be cited.

The children of the present generation, as has been true in all ages, acquire their habits mainly from imitation of adults; the adults on the other hand, acquired their practices at a time when there were few public hazards. These habits formed in childhood persist and we find men and women engaging in unsafe practices because of the habits of childhood and the children developing the same dangerous practices by imitating their parents.

The only means of preventing accidents, therefore, is to substitute a new set of habits for those developed out of conditions to which they are unsuited. This process is a matter of education and since it cannot go on in the homes, it must be done in schools. In the second place, safety is primarily a matter of habits, and habits are most effectively formed in childhood. During the period of youth it is the business of children to form habits and, since they are in school a large part of their waking hours, it necessarily follows that the school has a large responsibility for the formation of habits. In the third place, aside from the dollar cost of accidents, which is staggering; aside from the loss of lives, which is worse, accidents to children bring untold suffering and loss of opportunity to hundreds of thousands of persons and start children upon their careers with serious physical handicaps. The only way this can be avoided is through school education.

An adequate system of safety instruction has been worked out and incorporated into a large number of city school systems; plenty of material is now available to indicate to any teacher interested in the saving of human lives how these reductions may be brought about. What is even more important from the educator's viewpoint is that the material not only results in saving human lives, especially child life, but results also in enriching the public school curriculum. There

is extensive data indicating the almost universal conclusion of teachers that the result of the introduction of accident data into school instruction has served to arouse a deeper interest among children in their regular school work. Moreover, it stimulates endeavor and trains the child for effective citizenship.

The method of school safety cannot be outlined in detail within the limits of this section, but the appended bibliography will acquaint the teacher with the point of view which consists in incorporating into the regular subjects of instruction, such as, arithmetic, geography, history and civics, etc., safety instruction appropriate to the subjects and to the needs of the community. This plan in operation has achieved satisfactory results in the reduction of accidents and as previously noted, has brought about an increased interest in the school subjects.

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  7. Whitney, Albert W. *The Inner Meaning of the Safety Movement*. National Safety Council. Chicago, Ill. 1923. Free. 12 pp.
- Courses of study may be obtained from:  
Board of Education, Chicago, Ill.  
Board of Education, Detroit, Mich.  
State Supt. of Schools, Oregon.

### Other sources:

1. Other material, including a comprehensive bibliography in *Accident Prevention*, may be secured from the National Safety Council, 168 North Michigan Ave., Chicago, Ill., or from the Education Division of the National Safety Council, 120 West 42nd St., New York City.
2. Elliott Service Company, 244 West 49th St., New York City. A complete plan of school instruction in accident prevention, consisting of 18 bulletins dealing with every phase of accident instruction in the data up to the present. The most complete material available at the present time.

## J. HEALTH EDUCATION THROUGH THE STUDY OF THE LIFE PROCESSES OF PLANTS AND ANIMALS

I. From the beginning a child needs knowledge as well as habits. We must be ready to satisfy his budding and growing intellectual curiosity about himself as a living thing in a living world, and we must add to his equipment that store of knowledge which will help him to live his health rules intelligently and socially in relation to an environment that continually enlarges and changes, from his protected home to the larger world as he advances from kindergarten to college.

The unique contribution of Biology to this is that through it the knowledge and attitudes above referred to can be imparted through activities arising in connection with the caring for plants and animal pets, through observation and experimentation with living organisms, this giving the material a freshness and convincingness impossible through book study alone.

II. Nothing new can be added to the many scores of courses of nature and elementary science studies now in existence. Different selection of material (an undertaking involving a long time), should be made, however, in relation to the health program and also in relation to the other subjects of the curriculum. The Nature Study and the Biology are usually entirely unrelated in use as they should be in the Elementary School to interpret the child's growth and environment to him.

The Committee would suggest in illustration of its point of view,

1. That plants be studied to illustrate the nutritive processes, this being begun with simple experiments as low as the third grade.

2. That pets\* be studied in relation to growth—some simple experiment being attempted as early as the first grade, such as weighing a live puppy weekly and noting diet, sleep and exercises in relation to growth.

3. That school gardening or agriculture be made the vehicle for study of the origin of different types of plant foods—of the plant's metabolism—that this be followed by a study of the animal's utilization of plant food for its manufacture of meat, eggs or milk—and

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\* The main objection that can be raised against the handling of pet animals by school children is the remote, but possible, danger of rabies (hydrophobia) in dogs.

To avoid this criticism, it is suggested that dogs used as pets receive protection by the well-recognized method of vaccination against rabies. This consists of a single injection of a carbolized emulsion prepared from the brain and spinal cords of rabbits which have been artificially infected with the fixed virus of rabies. The product is absolutely safe, and can under no condition produce rabies in dogs or other animals. The injection is well tolerated, and no ill effects have been noted. The protection lasts one year and the inoculation should be repeated each year.

The vaccine can be obtained from commercial laboratories, and from veterinary agencies throughout the country.

that these studies be linked with geography and social studies, all this to be done beginning in the fifth grade or perhaps earlier and carried on through the Junior High School.

4. That general ideas thus obtained in the Elementary and Junior High School be the background for accurate and scientific study of applied biology in the High School and in the Normal School, in courses determined by the school organization. It should be remembered—

a. That much very important science material should be derived from chemistry and physics, as well as from the group of biological sciences.

b. That the organization of this science, especially in the Elementary School and High School (and quite possibly in the Normal School also) should be dominated by social and civic need and not by the logical development of any particular science. This does not mean that the science taught is to be any the less exact.

III. Purposes of the inclusion of biological material in a program of Health Education are:

1. To help the child grasp the relation of cause (habits, dress, exercise, etc.) and effect (in growth) in the realms of health. (Experimentation with plants; caring for pets.)

2. To help the child acquire a grasp of physiological processes through observation—experimentation. (Experimentation with plants and observation on animals and self.)

3. To give concreteness to nutritional instruction. (Food studies.) (Experimentation and observation on plants and animals.)

4. To enable the individual to protect himself and others from infections through a functioning knowledge which has been tested by activities. These activities should be obtained through studies of

a. Animal parasites and insects that may transfer disease.

b. Bacteria in relation to transmission of disease in relation to immunology, in relation to food, water and milk supplies, to sewage disposal, etc.

5. To lay foundations for sane and wholesome development of sex education, first in nature study and later in biology and the social sciences.

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## EDUCATIONAL PROBLEMS

## A. GENERAL PEDAGOGICAL PRINCIPLES FOR A CURRICULUM IN HEALTH EDUCATION

1. The curriculum in health education should provide for three kinds of closely related elements, namely:

- a. Activities and situations.
- b. Subject matter to make activities intelligent.
- c. Outcomes in terms of habits, attitudes and knowledge.

By activities and situations is meant such opportunities as plays, games and sports; eating; sleeping; the bodily functions; bodily changes through growth; accidents; household and community sanitary conditions; the appearance of communicable and other forms of disease; and other normally appearing occasions for making attention to health an explicit problem, always conscious to the teacher, and very often so to the children.

By subject matter is meant the items of knowledge and meaning by which the health needs and means of meeting them are to be made conscious and intelligent. This includes such knowledge of structure and function, and of sanitation as can be understood and used.

By outcomes is meant the intelligence and practice through habits, attitudes and knowledge which should result from the instruction.

2a. All subject matter presented should be in relationship to activities or situations in which the value and use of the subject matter will be understood, and in which it may be applied.

Subject matter presented apart from situations or activities in which it may be used has no bonds of connection by which to stimulate its recall on the appearance of a situation in which it should function at a later time. If subject matter is presented as a part of a total situation, including an understood and appreciated need, the probability that it will be recalled and used when the occasioning part of the situation recurs will be relatively greater than if the subject matter is presented in isolation from its use. For example, study of nutrition is much more effective if studied in relation to the real and practical problems of selecting and preparing the school lunch, than if nutrition is studied merely as a classroom subject isolated from actual life situations. Similarly, study of anatomy and physiology is often ineffectual, and does not in the least affect the health behavior of children, because it is not presented as an answer to some real problem with which they are dealing.

2b. All subject matter should be selected in answer to the question, "Does this activity or this knowledge help to meet an individual

or community health problem or need?" The most important criterion for the selection of activities and information in the health education curriculum should be its usefulness. How useful is it to the child to spend several hours in memorizing the number of bones and their names? How useful is it to know how to avoid diphtheria? How useful is it to the child to know how to select and arrange night clothing and bedding so as to be warm and comfortable with all the windows wide open on a cold winter night? How useful is it to the child to brush his teeth? to use a handkerchief properly? to be habitually cheerful?

3. Activities, related subject matter, and outcomes should be graded to correspond to the respective levels of interest, capacity, and health needs of children in so far as they may be able to participate or coöperate in controlling health practices and conditions.

With young children, health habits may be developed before they are able to understand much related health knowledge. As they grow older, health knowledge, both personal and social, may be correspondingly increased, and, in time, all health practices should be rationalized.

4. Health practices, and co-operation in controlling health conditions, should include both personal health activities and measures relating to sanitary living conditions in home and community.

5. The curriculum in health education should provide means for acquainting children with the health conserving resources available in reading matter; the public health service; all forms of medical and surgical aid and nursing and hospital service both public and private; and with the means and conditions for using these.

6. The curriculum in health instruction should indicate points of contact with other subjects the content of which has health values, and should suggest methods of incorporating such values, in developing health habits and practices.

Such subjects as food, clothing and shelter studies, nature study, biology, chemistry and physics frequently include much subject matter relating to health practices and values.

7. The curriculum in health instruction should be specific and detailed in presenting health subject matter and outcomes, as knowledge, habits and attitudes, but should allow for much freedom in making use of such variable conditions and situations as are found in different classes, schools, and communities. While content and outcomes should be specific, activities and conditions through which these are to be realized should be suggestive.

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## B. THE PLACE OF HEALTH EDUCATION IN THE CURRICULUM

Every part of the school curriculum that is intrinsically related to health education should be made contributory to the acquisition of ideas and ideals and the formation of habits affecting the pupils' health and the health of others.

Great emphasis has been justly placed in health education upon the incorporation of health teaching into the various other school subjects and projects. If this utilization of the appropriate materials in other subjects is deliberately planned and successfully supervised, the need for special periods devoted to health teaching will be minimized.

Some elementary schools have succeeded in carrying out their whole program of health education by this method. It has many advantages over the plan of confining health education to one school period. Attitudes are better built up by the frequent repetition in varying situations than by a single reference in one class period. Knowledge is more likely to be presented in answer to real problems if health education is related to the other school activities. There are opportunities for health education in every school subject. Suggestions are given in detail in Chapter VI.

In the secondary schools also, the health education program can best be carried out through using the opportunities which may be found in natural science courses, social science studies, household arts activities, and the physical education program.

In normal schools and college, the subject matter of health education should be presented in all those departments to which it is intrinsically related: natural sciences, including biology, chemistry and physics, psychology, bacteriology; social sciences; home economics; physical education, etc. For the professional student of health education, there will, of course, be many special technical courses. For the non-professional student, the major part of the health education program in college, as well as in elementary and secondary schools, may be carried out without isolating it as a separate "health" course provided the curriculum is deliberately and carefully organized with that end in view.

Even so—every prospective teacher, even when not specializing in Health Education should be required to take one course where the health program as a whole is considered, syntheses indicated, and methods of securing the standardized desired results, are discussed.

In any school where courses of study are rigid, and give no opportunity for health teaching in any other part of the curriculum, there

should certainly be time regularly and definitely assigned for consideration of health problems. In such cases, this period should have standing of equal importance with other subjects. It is also necessary to set aside definite time for such features as the daily morning health inspection (or review), weighing, milk-feeding, etc.



## C. CO-OPERATION BETWEEN HOME AND SCHOOL

The school is, after all, but the lesser part of the child's total experience so far as time is concerned, and it is difficult to state what relative influence the school and the home exert on the child's development. It is certain, however, that there are many home conditions which complicate immeasurably the school's problems of health education. Some of these situations are indicated in the following:

1. The school may teach proper dietary principles, and proper preparation of food, but in case the home diet is unwholesome, the influence of the school is at least in part nullified.

2. The home is primarily responsible for the amount of sleep which the child takes, for the frequency of bathing, for the proper use of clothing, and other important health practices.

3. The example set by the parents themselves in the home may discourage the children from practicing health habits.

4. Lack of coöperation in the homes makes the control of communicable diseases more difficult, and teaches the child to disregard school and civic regulations regarding quarantine, exclusion from school, etc.

These problems make it evident that to be completely effective, a program of health education must include some plan for co-operation of home and school.

The attempts to solve this difficulty have been few. Suggested plans, which have been used in some places are:

1. A monthly or quarterly report is sent to the parents regarding the child's condition of health. "Follow up" methods are used, when a reported health defect is left unattended, to call the attention of the parents to the needed correction. This report may include a statement indicating the health habits which the child fails to observe.

2. The "home project" in which the problem given the child is to be worked out at home, is another method. Planning and carrying out a week's marketing for the home is an example of such a project.

3. The visiting of the school nurse in the homes may be one of the most effective ways of establishing a spirit of coöperation.

4. Parent-teachers' Associations also offer opportunities for enlisting the aid of the parents. In one school, the parents' association prepared a booklet dealing with the health of the school child, which contained recommendations for the health care and conduct of their children, and members of this parents' association were advised to follow the recommendations of the booklet.

Because they had themselves been responsible for preparing and publishing the recommendations the parents were interested and will-

ing to follow the suggestions which were made. Mothercraft classes for the study of children, their care and education might be organized through clubs, parent-teachers' associations, Sunday schools and churches. The education of parents for their duties in the care of children is most necessary in order to gain the full coöperation of home and school.

5. The support of the parents and their active interest is much more easily maintained when the local health agencies, the school and the home are all working together in the interest of child health.

In one county in a western state, the teachers, the Parent-Teachers' Association, the Anti-Tuberculosis League and the Extension Service have coöperated to carry through a program of nutrition classes for underweight children, and public talks and lectures by a specialist. The nutrition classes for the children were carried on by local women after a brief training (2 to 5 meetings) by the one specialist. These local leaders were secured through the Parent-Teachers' Association, through the Farm Bureau, the Red Cross, and some School Boards. By this method work was carried on in 27 communities with 485 children enrolled. Of these, 376 made more than the normal gain for the period, and 97 attained their normal weight. It was reported that 277 families adopted the suggestions of the class.

This is a splendid example of the results that may be secured by active coöperation of home and school.

6. Visits of the teachers to the homes also do much to further coöperation.

## D. APPLICATIONS OF PSYCHOLOGY TO HEALTH EDUCATION

In this section, a brief statement is made of some psychological principles which should govern the selection of subject matter and the organization of the curriculum in health education, in the elementary school.

Certain facts of child psychology have been established with sufficient security to warrant consideration as guides in planning for health education in the elementary school. These facts may, for convenience, be considered under three categories as (1) facts about intelligence (capacity for learning), (2) facts about instinct and emotion (the dynamics of behavior), and (3) facts about habit formation (the laws of learning). We shall consider briefly the practical bearing of these categories of facts, in turn.

### Intelligence

#### DEVELOPMENT

Children in the elementary school generally range in birthday age from 5 years through 14 years. There are in almost every school some children who fall outside these limits, younger children (who are usually very bright), and older adolescents (who are usually very dull); but 5 to 14 years includes the majority of elementary school children, in the United States.

It has been established by quantitative psychology that a continuous process of intellectual growth is maintained (save for the intervention of certain diseases) from birth to maturity. The limit of growth has not been exactly established, but psychologists concede that it lies somewhere between 13 and 20 years. Thus children of 14 years, finishing the elementary school, are nearing their limits of intellectual capacity, just as they are nearing their limits of height. They are capable of grasping concepts which are far beyond the reach of the child just entering the elementary school.

It is important that health lessons should be clearly comprehended, since misunderstanding in this field may result in serious mistakes. This possibility increases the necessity for selecting as the subject matter of health education that material which is suited to the intellectual development of the child.

#### ABSTRACT IDEAS

It is known that average children do not adequately understand abstract nouns until about the age of 12 or 13 years. Thus children of ordinary intelligence who are younger, cannot tell what "health" means, even though they have been subject to health education.

Typical replies from children of 6, 7, 8 years to the question, "What is health?" illustrate this point; "Health is to open the window;" "It means to swat a fly;" "It is when you drink milk;" "brush the teeth in the morning." Children in the lower grades must be taught in very concrete terms, with pictures, and with illustrative examples. Even the conception of "bones of the body" is too abstract for second grade children. The idea of "growing" becomes more vivid to the child when he knows that growing means to get "tall and fat." From the 6th through the 8th grade, abstract concepts may be utilized.

### THE ABILITY TO GENERALIZE

The ability to generalize is very feeble in young children of ordinary intelligence, and is often over-estimated in teaching. For instance, children do not begin to interpret adequately the fables of Aesop until they are past 12 years of age. They profit, rather, from specific instances seen and heard. Attempts to teach through generalized statements or through symbolic presentation of abstract ideas (as in dramatization) will be most useful with children in the upper grades; dramatization of concrete situations is successful with children of the lower grades.

### VOCABULARY

The limitations of vocabulary in the case of young children are by no means generally realized, as studies of texts intended for their perusal have proved. It is necessary to effective teaching that these limitations be borne in mind. Material intended for presentation to large numbers of children should first be tried out, from the standpoint of vocabulary, on a sampling of pupils of the ages to be instructed. The vocabulary of a 14-year-old is twice as extensive as that of an 8-year-old, by standard tests which have been made.

Individual differences in intelligence are very great at all periods of development, and at maturity, even in persons of identical birthday age. Bright children, segregated in special classes, can be instructed extensively in the principles of health and sanitation, and will profit quickly by what they learn. Dull children, segregated in special classes, can grasp only simple facts, presented very concretely and as a group will be slow to profit from the instruction given. Where there is no segregation of children into special classes, so that all receive the same instruction regardless of capacity to grasp it, the bright will learn readily what is presented, while the dull will get little of it. The same facts apply here, as apply in all subject matters.

### The Dynamics of Behavior

#### KNOWING AND DOING

Intelligence conditions what an individual *can* do. The instinctive and emotional equipment determines more what he *will* do. Man is born with tendencies to form certain habits rather than others. Most of these tendencies are toward the formation of habits that make for

satisfaction at the moment. Since many of the acts which give immediate satisfaction are "unhealthy" either for the individual or for others, health education has many difficult problems of motivation.

In general, appeals to the avoidance of pain and danger (if you do so-and-so, you will suffer), to self assertion (if you do so-and-so you will have beautiful teeth, rosy cheeks, etc.), to rivalry (if you do so-and-so you will have stronger muscles than this-or-that person) are most effective (human nature being what it is). Appeals to general kindness are also quite effective (if you do so-and-so you will cause the death or illness of another person and therefore you should refrain). These appeals are not, however, equally desirable. The appeal to rivalry is easily overdone, and is used most constructively when the child progresses from the idea of excelling his playmates to the idea of excelling his own past standard, of beating his own record.

It should be the teacher's effort to supplant the rather negative appeal to avoidance of pain and danger by the more positive appeals, such as enjoyment of the increased efficiency and well-being that accompany good health, desire for increased social usefulness, etc.

#### APPEAL TO INSTINCT AND EMOTION

A danger of appeal to instinct and emotion is that extremely sensitive and unstable children may become hypochondriacal under health instruction. To minimize such dangers the teaching should itself be "health-minded," and should stress the positive aspects of health, avoiding sensational details of pathology. Some of the earlier instruction on alcoholism, given in the schools 30 to 40 years ago, dwelt too much upon the diseased conditions in the body attributed to alcohol.

The pleasure, beauty and usefulness of health should be brought before children in ways that will mold and strengthen their ideals of its desirability and impress upon them some of the most important ways of securing it.

#### Habit Formation

Health education aims at the formation of habits of behavior most of which pertain to the individual's extra-school life; habits of eating, of sleeping, of clothing, of bathing, of exercise, of ventilation, of emotional reaction, and finally of sexual activity. Therefore it must be admitted that the school meets many difficulties in its efforts to insure the actual formation of the habits at which it aims.

#### THE LAW OF EXERCISE

One of the most important laws of habit-formation is the Law of Exercise. This states that, other things being equal, an act becomes habitual by actual frequent repetitions, and in no other way. A habit of brushing the teeth, once, or twice, or three times each day can be secured by doing so over a more or less extensive period of time,



without lapse, and by no other means. The formation of such a habit is in the first place irksome to the average child, because it is not in itself a satisfier, but on the contrary often interferes with satisfactions such as play. The school can give knowledge and motivation which help to establish home health habits, although it cannot directly inculcate them, because the habits cannot be practiced at school. Furthermore, in many instances, the school should check up the child's performance of health habits by a daily inspection or health record.

Chapter V, Section C, discusses the co-operation of home and school. This is a necessity if the school is to undertake the health education of the child.

### THE LAW OF EFFECT

A second important law of habit formation is the Law of Effect. This law states that when satisfaction is associated with an act, it is more likely to be repeated than if it brings annoyance.

Therefore, the methods by which health education is carried on have direct influence upon its success. If satisfaction is a result of health habit performance, the habit is more likely to become established than if performing the habit is a disagreeable task.

It may be said, also, that one of the chief factors giving concrete knowledge and active motivation for the formation of hygienic habits is the personal example of the teachers themselves.

Ideals also are formed in accord with the laws of learning, through repeated successful experiences in which "living up to the ideal" brings satisfaction. It is good practice to bring to the attention of the child examples, stories, biographies, or news of the day in which the desirable ideals and corresponding actions are prominent.

### Mental Hygiene

Mental hygiene can be taught more or less indirectly in the elementary school by cultivating attitudes of (1) facing unpleasant facts squarely, (2) accepting just criticism amiably, (3) being "a good loser." Perhaps principles of mental hygiene could be presented as such in the 7th and 8th grades.

### Standards of Attainment

There should be clearly defined standards of attainment for various types of children, which should include both habits and knowledge. The recent movement for setting up objectives in health education for kindergartens is recognizing the unequal attainments of various ages in the school population. Children of less varied individual development should have opportunities to reach a standard or make improvement, as well as those of better physical development and training.

Care must be taken that less favored individuals shall have as many opportunities for success in reaching standards or making improvement as do those with better physical endowment and training.

### Methods of Measuring the Results

Methods of evaluating health education are beginning to receive attention. For this reason, the work should be clearly correlated with the results of achievement tests in physical education, the result of individual dental and medical inspection, and the pupil's knowledge of health habits and all-round living.

### Experimental Work in Health Education

There is great need for experimental work in the curriculum, methods, standards, and measurement of results under standardized conditions with proper control groups. The experiences of parents, physicians, and teachers have resulted in a body of information, but results of only a limited amount of research work have been published.

### The Relations of Physical and Mental Growth

Recent research work shows that there is a direct positive correlation between good physical development and good mental growth. These two aspects of the child's life go hand in hand. A later report will treat of this phase of the value of health instruction in detail. Control experiments in this field are greatly needed.

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## E. MINIMIZING SELF-CONSCIOUSNESS

The present tendency in health education is to make the child too self-conscious. In one state syllabus a health creed is advocated which contains the sentence "Early to bed and a long night's sleep will rest my mind and body and keep me from being nervous." Repetition of many such items as this in a health education program might easily make the children self-centered, self-conscious, and morbidly introspective.

It is desirable in a program of Health Education to emphasize more than has been done the importance of a wholesome mental and spiritual attitude. There is grave danger in putting too much emphasis on the lack of health rather than upon the possession of it. If health education is carried on in such a way that the smaller children know nothing of physiological effects and thereby are entirely unconscious of their bodies, the results will be far more desirable. There is very great need of a program of health education which minimizes consciousness of the body; which results in simple, practical habits of healthy living, and teaches the child to think of health in terms of usefulness and helpfulness to his parents, his friends and his community.

Here then, we have a difficult paradox which health teachers must face; the problem of encouraging their pupils to practice health habits, of giving them the necessary scientific information, and at the same time avoiding the danger of making them too conscious of their bodies and morbidly introspective regarding their own health.

Practice of health habits should be as natural and matter-of-fact a part of daily duties as lacing shoes. This matter-of-factness is not incompatible, as the child grows older, with the feeling of responsibility which the child should develop concerning his own health conduct. By the time the child reaches early adolescence he is quite responsible for many minor duties at home and school and for his own good behavior in both home and school. Just as naturally, he may be held responsible by parents and teachers for brushing his teeth, bathing, eating what is set before him, or choosing suitable food at the school lunch, and other health habits.

The regular systematic health inspection and examination should likewise be matter of fact and matter of course; routine examination and use of expert advice are even more important for the human organism than for an automobile or any other complicated mechanism. Ignorance must be replaced by knowledge, and superstition by science. But knowledge and science should not make the individual self-centered, desiring merely to be healthy and fit; they should help him to realize the ambition to be "fit for something."

## F. PHASES IN SCHOOL ADMINISTRATION WHICH ARE RELATED TO THE COURSE OF STUDY IN HEALTH EDUCATION

### The Responsibility of the Teacher

In the elementary schools responsibility for the regular health teaching should be assumed primarily by the classroom teacher. Better than anyone else, the regular classroom teacher can understand the needs of each individual pupil and can make use of the opportunities which arise naturally in the course of the day to teach health lessons.

### Supervision

The supervisor of health education should be qualified not only to promote all phases of the health teaching program, but should be able to see the relationship of health instruction to other phases of the school health program, and to enlist the co-operation of workers in other fields. A fundamental duty of the supervisor in this field is to help preserve the balance between her own program and the work of the rest of the school. She will not confuse the purposes of health teaching with the direct objectives in the program of physical education activities or the efforts to provide a healthful school environment, but she will be skillful to take every reasonable advantage of the direct and indirect contribution to her own field from other fields. At the same time, she will be keen to appreciate that to claim more than logically belongs to the health education program would result in greater loss to this field than to any other.

The principal duties of the supervisor should be to develop the Health Education skill and enthusiasm of teachers in service, through:

1. Providing teachers with the best known definite standards and tests of child health, teaching the use of same, and methods of evaluating results of work.
2. Assisting teachers to analyze the health needs of their classes and then to plan work to meet these needs, so as to produce positive results in actions, both through correlation of health instruction with the total of instruction, and through effective use of special methods, as weighing, inspection, etc.
3. Arranging extension courses in subject matter, to be given by those specialists in the school system or the community, best fitted to help the teachers.
4. Anticipating teachers' needs for materials of instruction, books, charts, supplies, etc., supplying same and stimulating inventiveness in use of experiments, trips, etc.
5. Arranging for inter-school visits to teachers who are carrying on successful health teaching and for conferences with these teachers.
6. Working out for her department definitely stated objectives, giving demonstration and lessons when needed.

Perhaps no one supervisor can do all the above types of work, but the supervisor's job primarily is continually to study the field as it



develops, and to improve the training and vision of the corps of teachers under his or her charge.

The supervisor should, of course, be not only a specialist in some one field, with a general appreciation of the contribution of the other fields—but should in addition have had experience in school administration and classroom teaching. Ability to get on pleasantly with people is taken for granted.

### School Health Service and Its Administration

Some important experiences contributing to health education come through the way in which the school plant is organized and the school program administered. These should be based on the best principles of hygiene. In so far as the school administration and organization ignore hygienic principles and make hygienic practices difficult if not impossible, the program of health education will be unsatisfactory. A healthful school and healthful school program will provide.

A. Healthful school plant, providing correctly constructed and equipped building; properly planned playgrounds; adequate and sanitary toilet facilities; and hygienic management of school grounds, plant, and supplies, including heating, ventilating, cleaning, lighting, correct adjustment of seats, and hygienic choice of classroom furnishing and supplies.

Through the experience of living several hours a day in such a school, and through studying the reasons for these arrangements, many lessons of sanitation and hygiene may be effectively taught.

B. Hygienic management of the school program, in such matters as length and arrangement of the school day, length of periods, number, length and character of recesses, use of examination and tests, forms of discipline, home study.

Such matters as these are important factors in habit formation—e.g., a class period which is too long, or which is managed poorly, may help to establish habits of inattention. Classroom management and methods of governing the students influence the nervous and emotional characteristics of the pupils.

C. Health supervision of children including (a) daily inspection, (b) health examination, (c) health service to bring about the correction of defects.

At the time of the examination or inspection, advantage should be taken of opportunities to impress health lessons and, even more important, to give positive health ideals at this time.

D. Hot and nutritious noon lunch in schools where such service is needed, especially in rural schools. The noon lunch offers splendid opportunities for education, through application, in the principles of nutrition.

E. A teaching staff which meets approved standards of good health; (a) well-balanced emotional control, (b) freedom from infectious diseases, (c) freedom from defects of hearing, (d) freedom from uncorrected defects of vision, (e) approximately proper weight.



All teachers should regularly have a thorough health examination. The teachers should also be so trained that they have a constructive point of view, with recognition of their responsibility for the pupils' health education experience.

The healthy, happy teacher is one of the most fundamental necessities in health education. The example set by the teacher is the great object lesson by which her pupils may be profited or injured.

These paragraphs have discussed the ideal school environment. In many places, however, this ideal environment cannot be realized for many years to come. In the meantime, it is of utmost importance to make use of such equipment as is available, and to make the present conditions as hygienic as possible.

For example one rural school reports that its pupils of ages 12 to 14 made, among other things, screens for the windows and doors, a sanitary cement top for the school well, a school washing sink, a school privy, rubbish cans and covers, first aid cabinet and equipment, and basketball, volley ball and tennis courts for the school.

In these activities, the children learn how to improve a comparatively unfavorable environment, and since many of them come from homes that are not ideally equipped, these experiences in improving their surroundings are invaluable.

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## VI

### SUGGESTIONS FOR COURSES OF STUDY IN HEALTH EDUCATION

The gradation of habits, activities and information which is given here is that which this committee believes is likely to be most useful, but it is not intended that this gradation should be followed arbitrarily without reference to the local situation, or needs of individual children. It is one of the purposes of this report to stimulate the teacher to discover the health needs and possibilities of her own pupils.

The material which is presented in this chapter is not a course of study, nor a complete outline, nor is the proportion of space given to various topics meant to indicate the amount of time which should be given to them. The material given for the first group (kindergarten, grades 1, 2, 3) is much more extensive than that for the other groups, and within this first group, several topics are dealt with in considerable detail; nutrition, play activities, nature study and safety education.

Briefer suggestions are given for other topics.

#### A. KINDERGARTEN, GRADES 1, 2, AND 3

The child's early school years should be devoted primarily to establishing health habits, learning simple rules and developing an attitude of self-control and a feeling of responsibility for his own health conduct.

It should be understood that social and emotional health are as essentially a part of a health education program in the early years as in later life.

These years bring to many children the first important experience in group life. They should learn self-control through adjustment to the rights and welfare of their playmates. During this period they should learn the virtue of service, of co-operation, of being alternately followers and leaders. They should be encouraged to tell the truth, to be kind in their relationships with other children and with pets, and to be frank, friendly and good natured. This will help to prevent the evils of deceit, cruelty, suspicion, and the holding of grudges. Emphasis should be placed on these moral qualities because they are often the source of such happiness or unhappiness as may profoundly influence health and welfare.

A statement of health behavior standards follows, which lists in considerable detail the most important health habits for children of

these ages. The aim of health education is to influence people to live in certain desirable ways. These ways are indicated in the scale, although it is obviously impossible to make such a statement entirely complete. In addition to the work done by this committee, the preparation of this statement was guided to a great extent by the "Tentative Inventory of Habits" prepared by Agnes L. Rogers, and issued by the Department of Kindergarten—First Grade Education of Teachers College, Columbia University, and by the "Tentative Revision of Achievements Section—Course of Study," published by the Early Elementary Department of the Public Schools of Kalamazoo, Michigan. Both of these statements grew out of extensive and careful observation and measurement of the abilities of children of these years.

In babyhood and early childhood, whether or not the child can live up to the standard set in the scale of health behavior depends very much upon the environment with which his parents and other adults surround him. In the scale, an attempt has been made to include the things the child can do, provided his environment is favorable. As the child grows older, his responsibility increases and his dependence upon older people lessens.

### Scale of Health Behavior

Kindergarten, Grades 1, 2, 3 (ages 5 to 9 approximately).

Health behavior to be attained by the child by the end of 3rd grade.

Behavior relating to:

#### I. The Healthy Organism

##### A. NUTRITION

1. Acquires a taste for the following foods: (a) milk, (b) green vegetables, (c) hard breads, (d) whole grain cereals.
2. Eats the quantities and kinds of food apportioned to him (this assumes that they are suitable).
3. Forms the habit of not expecting sweets regularly, and never except at the end of a meal.
4. Forms the habit of eating only at regular times.
5. Drinks 4 to 6 glasses of water daily.
6. Drinks no tea nor coffee.
7. Does not drink ice water.
8. Uses an individual cup, and uses the drinking fountains properly.
9. Eats slowly, chewing his food well.
10. Takes small bites and mouthfuls.
11. Washes his hands before handling food or eating.
12. Does not exchange food nor eat it after picking it up from the floor, ground or street.
13. Does not handle other people's food.

##### B. PLAY ACTIVITIES

1. Spends at least 4 hours daily in activities involving big muscles.
2. Takes part in group games and activities.
3. Holds body in erect position when standing.
4. Selects suitable chair and sits in it properly.
5. Enjoys play.
6. Plays "fair."
7. Responds to signals.

8. Responds to different rhythms, without necessarily keeping step perfectly.
9. Is able to walk, run, stand, stoop, reach, hop and climb.
10. Is able to throw, roll, toss, and catch a large ball.
11. Is able to go up and down stairs, both feet stepping.
12. Is able to climb, swing, teeter and slide.
13. Is able to lift, carry, lay down or pile blocks and boxes.
14. Is able to carry pail of water and shovel of sand without spilling.
15. Is able to hammer and pound.
16. Is able to push and pull a wagon with some weight in it.
17. Is able to carry a chair or a stool.
18. Often shouts, laughs and sings while at play.
19. Exposes himself to wet and cold as little as possible.
20. Is able to wade, splash, skip stones, and paddle (in kindergarten and grade 1), learn "dog-paddle" mode of swimming by end of grade 3.
21. Is able to express ideas through action and dramatic play.
22. Is able to count score.
23. Is able to be a good loser and a good winner.
24. Uses moderation in jumping and running.
25. Invites shy children to join in games.
26. Should be able to play the games listed in Ch. IV, Section F, "Physical Education."

### C. SLEEP AND REST

1. Sleeps 11½ to 13 hours, according to age (with windows open).
2. Likes to sleep in the dark.
3. Likes to have the windows open.
4. Relaxes during the rest period at school or the nap at home.

### D. FRESH AIR

1. Sleeps with windows open.
2. Enjoys being out of doors.
3. Spends at least 4 hours daily in activity involving the big muscles, out of doors as much as possible.
4. Helps in opening and shutting the windows when they are easily managed.

### E. HEALTH EXAMINATION AND CORRECTION OF DEFECTS

1. Coöperates in health examination by nurse or physician.
2. Is not afraid of nurse or physician.
3. Coöperates in correction of defects whenever his coöperation is needed.
4. Is willing to appear for the physical examination in the robes or garments desired by the school physician.

### F. CARE OF TEETH AND MOUTH

1. Brushes the teeth at least twice daily in an approved way.
2. Eats candy and sweets only in moderation.
3. Never breaks or bites hard substances with the teeth.
4. Does not suck fingers.

### G. CARE OF THE SKIN

1. Takes a cleansing bath at least twice a week, preferably daily.
2. Takes a cold sponge or shower in the morning following it by a brisk rub.
3. Uses only individual towels and wash cloth.
4. Dries hands and face thoroughly after washing.
5. Washes hands before eating and after going to the toilet.

### H. ELIMINATION OF WASTE

1. Evacuates the bowels at least once daily, at a regular time, preferably after breakfast.
2. Is able to control the voiding of urine and evacuation of bowels.

## I. CARE OF EYES

1. Reads only in a good light.
2. Reads very little by artificial light.
3. Holds his book in the correct position.
4. Refrains from looking directly at the sun or extremely bright lights.
5. Refrains from rubbing his eyes and keeps all inappropriate articles away from eyes.

## J. CARE OF EARS

1. Learns to wash ears carefully.
2. Refrains from putting anything into the ears.
3. Refrains from striking other people's ears or shouting into their ears.
4. Does not blow nose forcibly.

## K. CARE OF NOSE

1. Breathes with mouth closed.
2. Learns to blow nose gently, without closing the nostrils.
3. Uses only his own handkerchief.
4. Uses a clean handkerchief.
5. Avoids picking the nose.
6. Refrains from putting anything into the nose.
7. Covers coughs and sneezes with clean handkerchief.

## L. CARE OF HAIR

1. Learns to brush his hair.
2. Uses own brush and comb.
3. Keeps own brush and comb clean.
4. Submits easily to having hair washed.

## M. CARE OF FEET

1. Wears rubbers at appropriate times.
2. Removes rubbers when indoors.
3. Puts on stockings and shoes neatly and comfortably to prevent rubbing.
4. Helps to keep nails short and clean.

## N. CARE OF HANDS

1. Washes hands before handling food or eating.
2. Washes hands after the toilet.
3. Helps to keep the nails short and clean.
4. Refrains from biting nails or picking at hang nails.

## O. CLOTHING

1. Removes wraps, overcoats, extra sweaters and rubbers when indoors.
2. Puts wraps and clothing neatly in their proper places.
3. Wears appropriate wraps out of doors when they are needed.
4. Removes day clothing at night and wears proper night clothing.
5. Avoids getting wet, if possible, and removes damp clothing as soon as possible.
6. Comes to school with clothes as clean as possible.

## P. USE OF DRUGS, ALCOHOL AND PATENT MEDICINES

1. Drinks no tea nor coffee.
2. Drinks no alcoholic beverages.
3. Does not use cigarettes.



## II. The Healthy Personality

### A. MENTAL AND EMOTIONAL HEALTH

1. Takes a keen, active interest in either friends, games, hobbies, or in all.
2. Is curious concerning the world about him.
3. Persists in his work.
4. Concentrates on his work; pays attention to the task at hand.
5. Keeps his project in mind until it is completed.
6. Completes his task successfully, reasonably often.
7. Does his work promptly, not procrastinating.
8. Tells the truth.
9. Enjoys play.
10. Enjoys work.
11. Meets disappointments bravely.
12. Remains good-natured under trying circumstances.
13. Enjoys humorous situations.
14. Forgets grudges quickly.
15. Is not afraid of animals, storms or the dark.

### B. SOCIAL RELATIONSHIPS

1. Is friendly towards other children.
2. Is interested in making other people happy.
3. Is courteous.
4. Says, "Please, thank you, excuse me, good morning, good-bye."
5. Refrains from quarreling.
6. Is willing to share his possessions.
7. Refrains from taking what belongs to other children.
8. Gives back lost things to owner.
9. Shows kindness to those who are weaker or younger, and does not tease or bully.
10. Shows kindness towards animals.
11. Obeys the rules of the group.
12. Waits for his turn.
13. Is willing to take part in group activities.
14. Settles difficulties without appealing to teacher.
15. Refrains from interrupting others needlessly.
16. Keeps hands off other people.

### C. WORK

1. Does his work cheerfully.
2. Keeps work materials clean.
3. Keeps desk, toys, shelves and lockers in order.
4. Helps playmates, parents and teachers in their tasks whenever suitable.

## III. The Healthy Home and Community

### A. PERSONAL HABITS

1. Observes those personal health habits which help to check or prevent the spread of disease; i. e., washes hands before eating and after going to the toilet; does not exchange pencils or food; does not put fingers or inappropriate articles in the mouth; does not rub his eyes; does not use common drinking cup or towel, etc.

### B. CARE OF INFANTS AND CHILDREN

1. Helps his mother whenever possible, by looking after the younger children of the family.

## C. SANITATION

1. Covers mouth with handkerchief when sneezing or coughing.
2. Keeps floor clean at school (does not litter it), and keeps personal belongings as clean as possible.
3. Comes to school clean—face, hands and clothes.
4. Helps keep the school grounds clean; also yards and parks.
5. Uses toilets and lavatories in a sanitary way.

## D. CONTROL OF DISEASE IN SPECIFIC INSTANCES

1. Stays at home willingly when sick, so as not to expose his playmates to his sickness.
2. Submits to vaccination against smallpox, typhoid and diphtheria as a desirable means for protecting the health of his companions and himself.

## E. SAFETY FIRST

1. Crosses streets only at corners and at right angles.
2. Crosses only when traffic movement is favorable, and looks in both directions.
3. In crossing, looks "left"; crosses to center and then looks "right."
4. Waits for the policeman's signal (where traffic is regulated).
5. Keeps to the right.
6. Does not play around railroad tracks.
7. Does not lean out of the window of a car, or put any part of the body out.
8. Does not play with matches.
9. Keeps at safe distance from bonfires.
10. Does not handle gasoline, kerosene or other highly inflammable substances.
11. Does not handle firearms.
12. Does not slide on thin ice.
13. Paddles and wades only in safe places.
14. Picks up plaything and other articles to prevent falls.
15. Helps to keep stairways free from obstacles.
16. Walks carefully on slippery surfaces.
17. Refrains from putting inappropriate articles into the mouth.
18. Refrains from eating unknown berries, fruit, pills, etc.
19. Refrains from handling gas fixtures.
20. Refrains from handling electrical appliances.
21. Avoids fallen wires, electric cables, etc.
22. Puts nails and puncturing objects where they can do no harm.
23. Learns to use scissors, needles and pins properly.
24. Does not tease animals.
25. Recognizes poison ivy, and other common poisonous plants and avoids them.
26. Is able to give name, address and telephone number.

## F. FIRST AID

1. Calls older person to help in case of accident.
2. Avoids getting dirt into cuts and wounds.
3. Knows what to do in case clothing catches fire.

The suggestions which are made in the following pages are organized about the Scale of Health Behavior.

## How to Use the Scale

The scale may be used in a variety of ways. The teacher should as far as possible be familiar with the habits of each of her pupils. She may use the scale to help her in acquiring this familiarity.

### Health Habit Survey

The teacher should discover as early in the year as possible what the health habits of her pupils are. To do this, she should make a survey of her class, using the scale as a standard against which to check the behavior of her pupils. When she has made this survey of her pupils, she should know rather definitely both the good and the faulty points of behavior for each pupil. This will be useful in helping her to decide what the main emphasis of her year's health teaching should be.

The teacher should then study the results of this health habit survey, in connection with the health examination records of the school physician or nurse. In this way she can discover what phases of health education need most emphasis and concentration of effort during the year's work.

The points in which all of the children are perfect, or nearly so, need little emphasis in comparison with those in which their performance is most negligent and faulty.

### Health Habit Records

In the early elementary grades, the most essential habit record is the one which is kept regularly by the teacher herself, and which she may use to discover what habits the child is forming successfully, and in what habits he is failing.

It is not likely that it would be generally possible for the teacher to check each item in the scale of health behavior given here, in her habit record for the children. She will, as a rule, find it necessary to select only the most important ones. After she has made her health behavior survey at the beginning of the year, it is suggested that health habit records be made which would include the habits needing most emphasis in her particular class. This would enable the teacher to keep a record of the most important items in the children's progress in habit formation, and would meet the specific needs of each class more adequately than any uniform health habit record which could be made.

In many instances it has stimulated children to decided improvement to keep a daily record of their health habit performances. However, in these grades, the following conditions should usually be observed:

1. Do not attempt to have the children keep a daily record for a whole year. It is better to have them keep records for several short periods, for example, a week at the beginning, middle and end of the term, or in connection with some project such as making a health book.

2. Children of these ages cannot be expected to keep a record of as large a number of habits as older children. Some teachers have found that keeping track of one habit, such as drinking milk, could be carried on for a fairly long period of time, if a simple and interesting plan was used.

Should the teacher or pupils keep records of the health habits performed at home? There are serious difficulties and objections to be answered before giving an affirmative reply. First, when a reward is offered for regular performance of health habits, or when pressure of classroom sentiment and school public opinion is very greatly in favor of health habit performance (as, of course, it should be), the temptation to falsify may become so strong that the child yields, and through repeated yielding, forms a habit of untruthfulness.

Second, the performance of home health habits is often dependent upon conditions over which the child has little control, and it seems to work an injustice upon the child to make him keep a record which is discreditable, but which is so through no fault of his.

Third, the children may genuinely forget.

Fourth, there are psychological problems. Does keeping a record at school act as a stimulus to practicing health habits at home? In many cases it has helped, when for example, the public opinion of the school, the desire for a reward for a good record, the desire to improve, etc., are associated with keeping the record. But keeping a record does not necessarily mean improvement in habit performance, unless the other psychological conditions are favorable.

However, let it be clearly understood that "all of the most important health processes on the part of the child take place out of the school and not in the school. That is, the children eat at home, they sleep at home, and the teachers have no opportunity directly to supervise these great vital health habits. Consequently, if we confine our efforts in teaching health habits to those processes which take place in the school or which take place directly under the teacher's supervision, we will fail. That means that we must put into the hands of the teacher a procedure which will reach the health processes which take place outside of the school. From a psychological side, this means that we must find in child nature those tendencies and instincts which the teacher can use to control the health processes which take place outside of the school. That is the problem in the psychology of teaching health, which must be worked on." (Clark Hetherington—Report of International Health Education Conference, 1923, American Child Health Association.)

Is the keeping of health habit records one of these methods which control health processes which take place outside of school? Properly carried out, yes.

In view of the complexity of the situation the following recommendations are made:

1. That teachers should certainly keep a record of the performance of those health habits which she may observe or supervise at school.

2. That it is profitable for the children (in these grades) to keep simple records of their health habits which are performed at school. This is often done at morning inspection and may be done with very practical results.

It is advisable to keep records of home health habits, provided:

3. That with the coöperation of parents, school nurse, and by visiting the homes herself the teacher supplements the child's report upon performance of health habits at home, in such a way as to secure the essential information



about the child's diet, hours of sleep, habits of outdoor activity, cleanliness, etc.

4. That those points where the child is not responsible for health habit performance, should not be counted against him in a habit record. This might mean a readjustment of the habit record of the whole class, e. g., in order to avoid making one or two children conspicuous, it might be necessary to change the wording of the habit record, or to take off one or two habits.

5. That "rewards" and credits be used carefully and sparingly in checking up on home habit records.

6. That standards of honesty and accuracy in reporting should be represented to the children as being more important than the performance of the habit, or the reward.

### Daily Inspection

The daily inspection may be used very successfully with children of these grades. Only those points should be covered in the inspection which can be checked up by the teacher and pupils immediately, and preferably only those points for which the child has some share of responsibility. Often the inspection is done in connection with keeping a habit record. It may be done without having the children keep a record, but the teacher will usually find the morning inspection a help in keeping her own class records of habit performance.

Suggested questions are:

1. Are the hands clean? Face? Neck? Ears? Nails.
2. Is the hair clean, well brushed and cared for?
3. Do the teeth look clean?
4. Is the clothing neat and clean?
5. Are the shoes neat, clean and well-fitting?
6. Has the child a clean handkerchief?
7. Are rubbers, overcoats and extra sweaters or wraps removed?
8. Are feet dry?

The inspection should meet the following standards: (Course of Study Series No. 43, Oakland Public Schools, Oakland, California.)

1. Pleasurable, not disagreeable.
2. Encouraging, not discouraging.
3. Interesting, not monotonous.
4. A vital part of health teaching, not an unrelated activity. For instance, in one first grade it was a part of "playing family." "It became the duty of each 'family' (of pupils) to attend to these matters among its members. Each morning there was an inspection of hands, nails, teeth, hair, and handkerchiefs. At first this was done by the mother. Later the families in joint assembly elected a district nurse, who served for a week, making a daily call on each family." Wells, *A Project Curriculum*, page 68.

### Weighing and Measuring As An Educational Feature

The general health value of weighing and measuring has been discussed in Chapter IV, Section A. It should be pointed out here that the usefulness of weighing and measuring as an educational feature is undoubted. It arouses the interest of the child and also the child's parents. In general, it may be used to give the child a concrete, objective measure of the value of health habit observance. It offers a means by which the child may be brought to understand the cause and effect relationships between healthful living and normal growth. It gives the child a goal toward which he may work. As was indicated



in Chapter IV, the teacher should understand the limitations of the weight record as an index to health. This will enable her in her teaching to avoid such pitfalls as over-emphasis of the importance of weight, or making the child feel that if he is of proper weight it is not important for him to observe health habits.

### Use of Classroom Situations

The well-ordered school room, a flexible program which gives opportunity for spontaneous play and out-of-door periods, lunch, and rest periods, will furnish situations in which the children learn valuable habits. The play periods, work periods, period for rhythms, song and stories, the lunch period and the rest period all afford opportunities for establishing health habits.

For example, in the kindergarten, the following habits may be formed in relation to these periods.

#### I. PLAY PERIODS

1. Materials not put in mouth.
2. Selects materials and puts them away in proper place.
3. Allows child who first obtains a toy to keep it.
4. Waits for his turn.
5. Says "please" and "thank you."
6. Is friendly towards other children.
7. Learns to use tools.

#### II. PERIODS FOR RHYTHMS, SONGS, STORIES, VERSES

1. Responds to signals.
2. Is willing to take part in group activities.
3. Listens attentively to songs, nursery rhymes and stories.
4. Responds to different rhythms.
5. Does not use baby talk.

#### III. REST PERIOD

1. Learns to relax, and not to make movements to disturb others.

#### IV. GENERAL SITUATIONS IN SCHOOL REGIME

1. Keeps hands off other people.
2. Removes wraps and rubbers and puts them away.
3. Attempts to put on own wraps and rubbers.
4. Interprets commands.
5. Obeys the teacher.
6. Says "good morning" and "good-bye."

#### V. INDIVIDUAL INSTRUCTION BY TEACHER AS OCCASIONS ARISE

1. Keeps fingers away from mouth, nose and ears.
2. Brings handkerchief and uses it properly.
3. Covers mouth when sneezing or coughing.

### The School Luncheon As An Educational Feature

It is common knowledge that the little child is interested in seeing things, talking about things, playing with things, and doing things. The child between the ages of four and six years is a great imitator of the activities of older people. He likes to take part in the domestic work in the home, the cleaning, washing and cooking. Manual work

furnishes him with an outlet for the fund of energy with which he is naturally endowed and in a way that he enjoys. It is the opportunity provided for the child to do things, that educates him and helps him to take his place as a valuable member of society.

The school luncheon can be made a means of providing for the child educational material in a way suited to his needs. In fact the whole of the daily school program can be planned around a meal without undue emphasis upon the food itself.

### HEALTH HABITS

By means of the school luncheon the child forms good food habits. He learns to eat the right kind of food, and to get the idea of a suitable meal. He learns to acquire a taste for various vegetables and fruits. He learns to eat all the food on his plate. The influence of the social group is such that he will often eat in school the food that he refuses at home.

The lunch time offers an opportunity of encouraging the children in self-restraint, kindness, patience and much besides included in "gentle manners." The child learns by example and it would be an educational advantage to him if the teacher sat with him at the same table.

### COURTESY

The child learns to say "please," "thank you," "pardon me." He learns to wait for his turn and to "give and return thanks" for food.

### CLEANLINESS

The child learns to wash hands and face before eating and to come to the table neat and tidy in appearance. He learns to clean his teeth after a meal.

### CLEANLINESS DURING MEALS

The child learns how to use a napkin; not to talk with his mouth full. He learns how to chew his food with lips closed and without noise, not cramming his mouth too full. He learns to eat slowly and to eat from his own plate. He learns to sit at the table and not to run around during meal times. He learns how to use a spoon, fork and knife and not to handle the food with his fingers. He learns to drink only when his mouth is empty and not to eat food which has dropped on the floor.

### MOTOR CONTROL

Many exercises for developing motor control are centered around the school luncheon. Some of these are indoor exercises and some outdoor.

The setting of tables, moving chairs, spreading and folding tablecloths, laying the silver, arranging flowers, carrying trays of china and silver, serving food, pouring water and milk, using silver, sitting at table, all provide exercises in motor control, balance, poise and good deportment of the body.

Gardening and the use of garden tools provide muscular activity out of doors.

#### GARDENING

The child can plant a garden and raise crops of quickly growing vegetables and flowers. The vegetables can be used for meals and the flowers for decorating the luncheon tables.

#### NATURE WORK

The child's interest can be enriched and stimulated by nature lessons on the various common articles of food, vegetables, and fruits. He can learn the names of these, their mode of growth, color and form. His vocabulary becomes enlarged in this way.

#### PREPARATION AND COOKING OF FOOD

The child is encouraged to have a right attitude to the menial work of the home by taking part in the preparation and cooking of food and entering into the experiences of others. At this age he enjoys washing and cleaning vegetables and opportunities for different kinds of experiences are offered in learning to help in the cooking of simple dishes such as apple sauce, eggs and cookies for special festivals or birthdays.

#### OCCUPATIONAL WORK

The school luncheon may be used as a starting point for many school activities which have a sound educational value. The child can learn to make various articles both for use and decoration of the luncheon tables. He can make paper napkins, learn to fold them. Napkin rings can be made of raffia or cardboard. The child can make table cloths of coarse linen or cotton material and work with coarse embroidery cotton. He can paint flower pots and vases.

The child may take part in the cleaning of the table silver, the washing of dishes and glasses. He may help to scrub and clean the china cupboards and learn to arrange the dishes and silver and keep the various articles used clean and tidy.

#### SOCIAL FEATURES

The various seasonal festivals and birthdays may be used as opportunities for making decorative favors and gifts and the child's aesthetic tastes satisfied and cultivated in this way.

#### HEALTH TALKS

Valuable health talks may be given to the child in connection with the school luncheon. The cleanliness and care of teeth can be emphasized, also the care of the hands and nails, the importance of drinking water, and the value of milk, fresh vegetables and fruit. In this way the child will establish good habits which will help to build up sound health of body and mind.

It is the aim of any educational feature to awaken the child's interest in his surroundings and his own relationship to his environment,

Our great industrial system has taken out of the home most of the primitive and domestic activities; the child is deprived of the joy of taking a share in many valuable educational arts and crafts. Why not use the school luncheon as a means of preserving some of these simple, every-day activities by grafting them into the educational system?

Quite detailed suggestions are made here for teaching foods, showing the various school activities in which these lessons may be taught.

## Nutrition: Suggestions for Teaching Foods

Important topics for discussion in teaching foods in the early primary grades are intimately related to the habits listed under nutrition in the scale of health behavior. The more important topics, the ones about which it is most essential for children to acquire information are listed in the following paragraphs, with examples of directing questions: (See also Chapter IV, Section C, Nutrition and Health.)

1. Special foods important for children's growth are:  
Milk                                  Cooked cereal breakfast foods  
Green vegetables                 Hard breads  
What food makes little kittens grow? Dogs? Calves? Babies?
2. Food must be suitably chosen to insure growth.  
What is a good breakfast for a kindergarten, or first, second or third grade child  
What is a good luncheon for him?  
A good lunch basket or school lunch? Supper? Dinner?  
How much sleep is needed to help children's bodies take care of the food?
3. Growth is a sign of health in all young animals and children.  
How much milk do children need in order to grow?  
What will milk do for your bodies?  
How much sleep is needed to help children's bodies take care of the food?
4. Weighing and measuring is a means of studying children's growth.  
(Discuss in connection with weighing and measuring.)  
Do you weigh as much as you should?
5. Strength tests show physical gains. (As a result of proper eating.)  
(Discuss in connection with giving strength tests.)  
Do you want to keep getting stronger?  
What kinds of food help you to grow stronger?
6. In connection with daily checking of charts on food and health habits, a discussion of the child's difficulties in performing good health habits.



## ACTIVITIES THROUGH WHICH FOOD LESSONS MAY BE TAUGHT

Activities which have been successfully used in early primary grades in establishing good food habits and attitudes, and in teaching food lessons, are discussed in the following paragraphs:

## SITUATIONS IN THE SCHOOL ROUTINE

The school luncheon, the mid-morning milk, weighing and measuring and the health examination are situations in the routine of school life in connection with which lessons of nutrition may be effectively taught. In addition, the nutrition class offers a special approach to the pupils who are enrolled in it. (See pp. 98, 99, 100 for a more detailed discussion of use of school situations in the school routine.)

## CONSTRUCTION ACTIVITIES

Drawing, painting, poster making, chart making, paper cutting, etc., may be used to help in teaching almost any nutrition lesson. Children of these grades have exhibited great originality in developing interesting posters and charts. Some suggested themes are given below: "Before and After Drinking Milk" has been frequently depicted by representing children of marked contrast in physique. The same theme has been depicted by see-saws with husky looking milk drinkers over-balancing dangerously lean undernourished figures.

Charts emphasizing 3 glasses of milk may be made in a variety of ways.

Cut-out pictures are useful from which children choose to make a good meal, pasting these on a chart.

Another device is to have the children make or cut out pictures of various kinds of foods, and paste standards to them so that they stand upright. Then have the children select from these, assembling food dishes that would make a good breakfast, a good luncheon, etc.

Making a clock face with various daily duties indicated opposite the hours may teach the lesson of regularity in eating.

Representing the "Victory of the Milk Bottle" (in which a milk bottle personified eliminates the coffee pot) helps to create a desirable attitude.

Many teachers have found the making of a health book a very interesting device for the children. A wide range of originality and ingenuity may be used. The book may be filled with pictures illustrating health habits, with compositions, poems or rhymes (such as a health alphabet) or it may be used as a record of the child's health habit performance.

Sand table construction has been used effectively to teach nutrition. Suggested themes are:

1. "Breakfast Land," similar to "Health Land," a description of which may be obtained from the American Child Health Association.
2. A health parade of vegetables.
3. A dairy ranch.  
A milk train carrying milk from ranch to dairy.  
Delivery wagons carrying milk to houses.



4. Plant sand box with paper vegetables, and stress the leafy ones and the tomato.

(3 and 4 are described in "A Program for Health Work in the San Francisco Schools," prepared by Mrs. John Collier for the American Child Health Association.)

Early primary grades have been very successful in construction of grocery stores, usually as class rather than individual projects. Some classes make life size fruits, vegetables, bottles of milk, and representations of other wholesome foods. Clay, paper and plasticine are the materials most easily used. Other classes have made complete grocery stores in miniature, furnishing the store only with foods which are good for children. Bread, milk, fruits, vegetables and cereals are represented. In addition, sanitary regulations should be observed in wrapping bread in oiled paper, keeping milk in a miniature refrigerator, and representing everything as scrupulously clean.

Making a small "moving picture" outfit is an interesting problem which children in early primary grades may undertake. The story is cut out from magazine pictures, or made by the class as "cut outs" or drawn or painted and then pasted on the long paper strip which is the "film." The film winds upon two wooden rollers. The proscenium arch and theatre fittings may be as simple or elaborate as the class wishes to make them.

### LANGUAGE ACTIVITIES

Language activities may be used to teach any health lesson; they are not applicable merely to teaching nutrition.

Health lessons may very easily be made the subject matter for beginning the teaching of reading. For example, the picture of a baby or child sleeping in a room with windows open, or pictures illustrating other health habits may be used. Print in large letters the words for each poster, such as "Sleep," "Fruit," "Milk." Large vegetable and fruit charts may be made by pasting small colored pictures of different fruits and vegetables on a sheet of heavy paper, and printing the name of each underneath. These pictures can be used for language work, and the children will gradually learn the printed words as "sight" words. In this way they will build up a health vocabulary. After some little time, the teacher can begin to print original health reading lessons on the board. If she has access to a small printing set, these lessons can be printed on separate pieces of paper and pasted into the children's Health Books.

### A SHORT HEALTH STORY

#### *"The Cow"*

"We can see the cow. The cow is black and white. She gives us milk. We all like milk. Milk is good food. Baby likes milk. The kittens like milk. Do you like milk, Jack? Yes, my mother gives me milk. Grace is a pretty little girl. She likes milk. She plays in the sun. She eats green vegetables. She likes soup, too. She eats oat-

meal every day. Grace goes to bed early every night. I want to be like Grace.'

"Some teachers have been successful in having the children make their own reading books when they have progressed somewhat further. In these, they may print simple health slogans, or simple health stories which they themselves originate. Lessons in reading and writing or printing may be included in the problem of making a health poster which must have a slogan or motto of some sort written on it.

"For example, under the picture of a child seated at a dining room table the following lesson might be printed: 'Mary drinks a glass of warm milk or cocoa every morning. Mary drinks a glass of milk at 10:30 in school. Her mother gives her a glass of milk every day for dinner and for supper. Mary drinks four glasses of milk every day.'" "A Program of Health Work in the San Francisco Schools" (prepared by Mrs. John Collier for the American Child Health Association).

Stories and compositions may be written on the blackboard as well as in the health books. Children may also write health verses to be sung to the tunes of favorite songs.

As soon as children have acquired a sufficient reading vocabulary, the use of supplementary reading materials is a fascinating and profitable method of teaching health lessons. Stories, rhymes and poems are available in very attractive form, dealing with many health topics. In addition to the reading materials which have been prepared especially to teach health, many old familiar stories and much of the material in readers may be used to teach a good health lesson, by emphasizing the proper points.

#### DRAMATIZATION

Successful use has been made of dramatization in all grades, either in using plays that have been printed, or in having the children originate their own plays.

Spontaneous and original plays may be very simple. For example, a first grade class in Louisville, Ky., dramatized this story: "You be father and I'll be mother; she can be our little girl. We'll take her to the doctor. He'll tell her what to do to get well, and we'll say she'll do that." This play involved many health lessons, such as the relation of food and sleep to growth. (Health Education series, No. 13, U. S. Bureau of Education.)

#### NATURE STUDY ACTIVITIES

Growing a plant, feeding a pet animal properly (fish, bird, rabbit, etc.), a study of what the cow must have to give good milk, are examples of nature study activities which may be used to teach food lessons. Pages which discuss the use of nature study in teaching health give more specific suggestions.

## INDOOR PLAYS AND GAMES

Plays and games are discussed not from the standpoint of teaching nutrition alone, but many other lessons. This is illustrative of the fact that many activities will be of such a nature that they do teach many health lessons in the one activity.

Family life games offer splendid opportunities for teaching health and children delight to play such games. "Playing house," when "you'll be papa and I'll be mamma and Mary'll be the baby" is an activity known to every child. One first grade grouped itself into families of four or five members each, and for a whole year carried on the "playing family" game. "It became the duty of each family to attend to those matters (of personal cleanliness) among its members. Each morning there was an inspection of hands, nails, teeth, hair and handkerchiefs. At first this was done by the mother. Later the families, in joint assembly elected a district nurse who served for a week, making a daily call on each family." (Wells, *A Project Curriculum*, p. 68.)

Play with dolls affords opportunities of making clothing and finding out what sort is healthful and appropriate; of preparing meals (in play); of keeping doll children clean; of seeing that they go to bed early; that they "eat" the proper food; and keep the windows open; in short, the family life games are richer with opportunities for teaching health lessons to the young child than any other kind of project, and they may be adapted to a great variety of situations.

"The following list of good habits was gleaned from the children's talks to their dolls:

1. Wash clothes often.
2. Do not wait till the clothes are very dirty.
3. Keep body clean.
4. Brush clothes.
5. Keep them on hangers.
6. Put clothes in the air at night.
7. Wear aprons and overalls.
8. Brush hats when dusty.
9. Put hats away in boxes after wearing.
10. Don't throw hats in the dirt (a favorite pastime at recess).
11. Brush and polish shoes.
12. Wash stockings often.
13. Change and wash underwear often.

"The children performed very conscientiously the duty of teaching the dolls these rules, and these lessons did actually work over to a large extent into good personal habits and better care of the children's own clothing." (Margaret Wells—*A Project Curriculum*, pp. 20-71.)

In connection with playing family life games, the project of building a doll house offers still further opportunities for teaching the children lessons about open windows, clean kitchens and bathrooms, for example.

Other types of plays and games may be developed, depending only upon the resourcefulness of teacher and pupils. Examples of other types of games are given in:

"Health in Play," pp. 33-38, published by the American Child Health Association.

#### ARITHMETIC

The children may make up simple health problems about cost and choice of fruit, vegetables and milk, hours of sleep needed, etc. For example, "My mother gave me five cents. I went to the store and bought two cents worth of spinach. I had three cents left. When I took the spinach home to mother, she said, 'Spinach makes you grow. Go back to the store and buy three cents worth more of the spinach.'"

#### GEOGRAPHY

In relation to seasonable changes bring out the following health needs:

A. Games. Stress the seasonable sports and games that provide vigorous outdoor exercise.

B. Food. Stress the fact that the food we eat must be carefully planned according to the body needs by showing the difference in diet between races living in cold countries and races in the tropics.

C. Stress the health protection that proper clothing affords.

("A Program for Health Work in the San Francisco Schools," prepared by Mrs. John Collier for the American Child Health Association.)

#### WRITING

Writing in health books, writing health habit rules, writing sentences about health habits, are all suggested devices. That is, the vocabulary of writing lessons may as easily include material from the field of health education as any other.

#### OUTDOOR PLAYS AND BIG MUSCLE ACTIVITIES

The desire to be "fit" to take part successfully in games and sports serves as a stimulus to the observance of all rules of health. The relationship between diet and "fitness" is very close. While the active games and sports do not specifically offer opportunities for teaching definite food habits, for example, they supply through the desire to be "fit," very strong stimulus to eating the right sort of food. This is a very important correlation which should be used as fully as possible by the teachers.

#### Suggestions for Teaching Play Activities

The important phase of health teaching regarding play activities is, of course, to make sure that all the children actually take part in the activities, under favorable circumstances, for as many hours daily as is beneficial.

However, at the end of this time they should have a simple intellectual appreciation of the value of play activities, in addition to the love of play which is every child's birthright. It is reasonable to expect the child to know such things as these:

1. Playing helps young animals and children to grow. (See Nature Study Correlation, pp. 114-116.)
2. The best place to play is out of doors.



3. Playing outdoors helps to make you strong.
4. Playing outdoors helps to keep you well.
5. Children should be dressed suitably when playing outdoors.
6. Standing as tall and straight as possible helps the body to grow tall and straight (not crooked).
7. Everyone should "play fair" in all games and plays.
8. Joyous activity out of doors is better than purposeless activity.

The playground activities before and after school, at recesses, and in the gymnasium periods are the school situations which offer fullest opportunities for play activities.

There is often successful and intimate correlation between play activities in dramatization projects. Health plays and pageants very often include dances, games, natural gymnastics and stunts.

Construction of simple apparatus for play activities is a valuable correlation. Children in the early primary grades can make soft balls (from old stockings), bean bags, and can stuff old leather covers of footballs, volleyballs, etc., with paper, rags, or other not too heavy material.

### Sleep and Rest

The child at the end of this period may reasonably be expected to have a simple intellectual appreciation of such subject matter as the following:

1. Sleep and rest help young animals and children to grow. (See *Nature Study*, pp. 114-116.)
2. Sleep and rest give the child a chance to get strong again after he has grown tired.
3. Children rest better when asleep if they sleep with their windows open, or out of doors.
4. Sleep is more restful in a dark, quiet place than in a bright, noisy place.
5. When other people are sleeping or resting, children should try not to disturb them.

The relaxation or rest period at school offers a real situation in connection with which many of these lessons may be taught. Other suggested activities are:

1. Plays and games with dolls or other children about family life; also games such as "The Sandman," described in *Course of Study Series*, No. 27, p. 8, Public Schools, Oakland, Calif.
2. Construction of houses, making a model bedroom, with windows open.
3. Making posters, charts, writing about sleep.
4. Language activities, reading poems and lullabies of sleep; stories; dramatization.
5. Nature study. (See *Nature Study*, pp. 114-116.)

### Fresh Air

In relation to the habits listed under "Fresh Air" such subject matter as the following may be appropriately taught:

1. Children should play outdoors rather than indoors whenever possible.
2. Children should sleep with windows open.
3. The thermometer should not be higher than 68 degrees in school or in living rooms at home (second and third grade).
4. Fresh air helps children, animals and plants to grow. (*Nature Study*, pp. 114-116.)



Helping to keep the schoolroom well ventilated (wherever windows and ventilation system permit) and out-door play are the routine school situations in which lessons about fresh air may be effectively taught.

One of the most effective activities for teaching lessons about fresh air is poster making. The attractiveness of out door activities, the delights of sleeping with windows open, are themes that have brought forth many interesting and original illustrations.

### Care of Teeth

Information regarding teeth should include such topics as the following:

1. The child should know how to brush the teeth.
2. Keeping the teeth clean by brushing them helps to prevent them from decaying and causing toothache.
3. Chewing hard, coarse foods (such as whole wheat bread) helps to keep the teeth in good condition.
4. The teeth should be brushed at least twice a day, and always after the evening meal or before going to bed.

The health examination and the daily inspection may be used effectively to influence children to care properly for their teeth, and to give desirable information.

Thorough instruction should be given in the proper use of the tooth brush.

Nature study, supplementary reading, dramatization, family plays and games, and poster making offer the most fruitful opportunities for correlation.

### Topics G (Care of Skin) to N (Care of Hands)

These topics may be treated in very much the same way.

The daily inspection, the use of the lavatory and toilet rooms, and the health examination are natural school situations, the educative possibilities in which should be utilized. If needed, the children should be given instructions in decent and sanitary use of the toilets and lavatories; also how to wash the hands, and to leave the wash basin clean and neat.

The proper care of skin, eyes, ears, nose, hair, feet and hands may be effectively taught in family life games (see page 105). Nature study (see pages 114-116), reading, dramatization, and poster making.

It is unnecessary for children of these ages to understand the human physiology of these parts of the body. It is important for them to observe the health habits listed, and to have the information that is necessary for their performance.

### Clothing

Such topics as the following should be part of the child's information by the end of the third year:

1. Clothing helps to keep us warm.
2. Clothing should be heavier in cold weather than in warm weather.

3. Wet clothing makes us cold. (Therefore remove it or dry it as soon as possible.)
4. Too much clothing makes us too hot. (Therefore remove wraps when indoors.)
5. Clothing should be clean and neat.
6. Tight garters are harmful.
7. Shoes should be comfortable, should have low heels, broad toes, and straight inside line.

The daily inspection is the most useful situation in the school routine for teaching lessons of cleanliness in clothing.

The most direct correlation in teaching the health lessons about clothing, is with industrial arts, in which the study of clothing is taken up from a much wider point of view, which includes the health problems of clothing.

Making doll clothes, washing the doll clothes, finding out where the clothes come from, what they are made of, how flax, wool and cotton are produced, and how they differ from each other, offer an interesting setting of activities in which health lessons may be effectively taught. (Bonser and Mossman—Industrial Arts for Elementary Schools, Ch. VIII.)

The study of how animals keep warm is an effective correlation with nature study.

### Drugs, Tea, Coffee, Alcohol

The most important and essential element in health teaching regarding these topics is the establishment of an attitude condemning the use of tea and coffee, and drugs and alcohol. The children should not know detailed physiological effects at this age.

Stories, games and poster making, in which the tea and coffee pots and any objects associated with the use of alcohol are represented as enemies of children, present effective methods of establishing the desired attitudes.

Planning picnics, refreshments for parties, or doll parties, is another opportunity for establishing the habit of choosing milk, water, cocoa, lemonade, instead of tea or coffee. For discussion of temperance teaching, refer to Chapter VI, Section E.

### The Healthy Personality

All school activities afford opportunities for the establishment of the habits listed in this group, provided the school is organized with the aim of promoting the welfare of all parts of the child's life, not merely imparting information.

The analysis given on p. 98 suggests the opportunities in kindergarten and first grades in natural classroom activities, for developing these desirable habits.

There is very little intellectual information which is essential content for the child's mind on these topics. The important thing is that the desirable habits be established.

## The Healthy Home and Community

### Personal Habits

These have already been discussed in preceding sections.

### Care of Children

Games about family life (discussed on p. 105) and games with dolls are the most effective means of teaching how to care for babies and children, e.g., in bathing doll babies, dressing them, feeding them, putting them to sleep.

Care of young animals and pets in nature study is also effective.

### Sanitation

In these grades, the information dealing with this topic should be similar to these suggestions:

1. Keeping the school house clean helps to keep children well.
2. Washing hands before eating and after going to the toilet helps to keep children well.
3. Coughing and sneezing in other people's faces may make them ill.
4. When children put pencils in their mouths, sometimes a disease germ is on the pencil, and makes the child sick.
5. The city makes parks for children to play in, and children should help to keep them neat and clean. (By not throwing papers and rubbish, etc., about.)
6. Using a public drinking cup is dangerous.
7. Children help to keep themselves and other people well if they use a drinking fountain properly: i. e., let it run for a few minutes before drinking, and do not touch the lips to the fountain.
8. Children help to keep themselves well by never drinking water from streams, or unfamiliar springs and wells.

Opportunities for impressing these lessons occur frequently in the classroom, on the playgrounds, at daily inspection.

Nature study affords an opportunity to give the child the simple beginning of understanding that cleanliness is important as a protection. Because of this, all physical education is a part of safety just

Poster making, dramatization, reading, etc., may be used to teach this lesson in ways similar to those suggested for other topics.

### Control of Disease in Specific Instances

Children should know that it is best for them and for their playmates to conform to the standards listed in the scale under this heading, and the school attitude, or public opinion, should be such as to reinforce this knowledge. But it is unwise to make discussion of any specific diseases part of the course of study in these years.

### Safety First

The important point, of course, is to educate children to do the safe thing, but it is readily seen that a certain amount of information is necessary for the doing, as is suggested in the following paragraphs.

The knowledge which the child should have in these years regarding safety is simple, but important. The child should have information of this type:

1. In order to cross streets safely, children should know, for example.

(a) "Left" and "right." Children often do not learn this distinction till they are in the second or third grade.

(b) Which direction the traffic takes on each side of the street.

(c) What the traffic policeman's signals mean.

(d) That corners are the only proper places for crossing.

(e) That streets should be crossed straight (at right angles), not diagonally.

Activities in which safety lessons have been successfully taught are as varied as the whole range of school activities.

There are numerous situations in the school routine which afford opportunity for practicing safety education, crossing streets on the way to school; playground activities, in the use of play apparatus, throwing balls, going up and down stairs, etc. School Safety organizations are effective means of encouraging safety-habits in all such situations.

### PLAY ACTIVITIES

"All training which develops the senses and makes for a healthy alert vigorous body is safety education, for many accidents are the result of physical defects or lack of muscular control and coördination. Because of this, all physical education is a part of safety just as it is a part of health. A quick eye, a keen ear, a steady hand, a sure foot, a level head and a fair mind are the best possible safety devices." From "An Introduction to Safety Education," Education Division, National Safety Council.

### INDOOR PLAYS AND GAMES

The following indoor games are also recommended in the bulletin just mentioned. "A traffic game which will teach the necessary rules of the road for pedestrians and vehicles may be played. A street crossing is marked off on the floor with chalk, or the front of the room may represent the main thoroughfare with aisles as side streets. One child is chosen as traffic officer and the other children represent automobiles, street cars, motorcycles and pedestrians. The officer gives the proper signals and the traffic and pedestrians obey. The children who follow the signals most promptly and accurately qualify to act as traffic officer in turn.

"The Lost Child" game may be used to drill the children in their addresses, telephone numbers and a description of the location of their homes. The lost child appeals to the friendly policeman for help. The officer asks the child's name and address, and in case the child has forgotten the address, he may describe something near his home, such as a church, a park, a fountain or a public building. The policeman then takes the child home to his parents; or if the telephone number is given, he may take the child to the police station and send for the parents."

A game of "What I can do to help make my home safe, comfortable and attractive," may be played by letting the children suggest the things they can do, such as picking up playthings, putting matches,



pins, knives in safe places away from the baby, pushing in bureau drawers so that no one will bump against their sharp edges, etc.

### CONSTRUCTION ACTIVITIES

"This project was carried out in the kindergarten of the Brayton School, Madison, Wis. A part of the school and floor was set aside for this purpose, the streets marked off with chalk, sidewalks whitened, and strips of green paper laid down to represent turf. Buildings were built of blocks, miniature telegraph poles and lamp posts were made of slender pieces of wood supported by empty spools and many realistic touches given, such as tiny letter-boxes, stop and go signs, and twigs stuck in spools for trees. The children brought their toy automobiles and fire engines, and dolls formed the "dramatis personae." A description of the project received from Miss Jaspersen, principal of the Brayton School, lists the following items:

1. The dangerous crossing of East Washington Avenue and Butler Streets where many accidents might happen if people do not obey the rules of Safety First.

2. The child who is jay-walking, or crossing the street in the wrong way.

3. The careful child who is crossing the right way.

4. The taxicabs which practice the rules of safety; "Keep to the right."

5. The thoughtless truck driver who was in such a big hurry that he came down the wrong side of the boulevard, after having left the garage.

6. The two garages that should insist that all patrons toot their horns before backing out into the street.

7. The little "Safety Scout" who is guarding a live wire that has just fallen from the telephone post. This thoughtful child knows better than to touch the wire himself and he will keep others from being injured until the telephone men arrive.

8. The strange animals that children should never touch, or molest in any way.

9. The Brayton School Safety Scouts who practice the rules of Safety learned in School. ("An Introduction to Safety Education.")

A sand table project called "Main Street" was carried out in Grade 1A, Public School No. 2, Hackensack, N. J. It represented two of the familiar streets of the city, and when completed, included representations of the following things:

"Roads with trolley and train tracks, sidewalks, houses and stores, railroad station and train gates, telegraph and trolley poles and wires, people, policemen, trolley and trainmen, trolleys, railroad and freight cars with engines, fire hydrant, signs on street cars, stores, safety zones and the clock." In this project, the children learned.

"Directions of cars and trains so as not to get lost.

"Names of the next towns and streets through which trolleys and trains pass.

"How to read the signs and be independent when traveling.

"How to pass a trolley when it has stopped.

"How to get on and off a trolley car.

"The place to stop wagons and cars.

"Use of safety zones on roads and curbs.

"Value of train gates.



"Necessity of fire hydrants; why they must be kept clear for firemen.

"Wires must not be handled.

"Walk on right-hand side of street except when passing from the rear.

"Streets must be kept clean."

Other suggestions for sand-table work are:

"A model playground, park or street closed to traffic to serve as a playground. Bring out the possibilities of the fun a child can have there.

"A camping party showing the right way to build and put out a camp-fire, with a desolate, burned-over piece of woodland on one side and a growing forest on the other.

"A snow scene with sloping streets for coasting, some intersected, where one must not coast because of traffic and railroad crossings, and others where it is safe to coast. .... This can be made a means of discussing the whole question of winter sports beginning with the clothing necessary for proper protection and emphasizes the fun one can have in safe places where one can be free to do as one pleases and will not be a nuisance to other people using the streets." (From "An Introduction to Safety Education.")

### LANGUAGE ACTIVITIES

Story telling, reading, compositions and dramatizations, pantomime, and shadow pictures are as useful in safety education as in other fields of health teachings. For detailed suggestions, use the references list in the bibliography, pp. 156-161.

### NATURE STUDY ACTIVITIES

Study of safety devices in nature is very interesting to children, and be used in helping them to appreciate the value of the life, both of human beings and animals, and the importance of preserving life.

### First Aid

Children of the early primary grades can be expected to know only the simplest skills in first aid. Examples follow:

1. When something gets into the eye, do not rub it. Try closing the eye so that tears accumulate and wash it out. If unsuccessful, go to an older person to remove it.

2. For nose bleed, the child should hold his head far back, place a handkerchief over his nostrils, and take slow deep breaths. Cold cloths placed on the back of the neck and on the nose will also help.

3. If hands or feet (or any part of the body) are frosted, use cold water or snow in rubbing the part, not warm water.

4. Any hurt which breaks the skin should be kept clean. It is a good thing to let the wound bleed a little.

5. If a child's clothing catches fire, he should lie down on the ground and roll, or wrap himself in a rug and roll.

First aid lessons may be most effectively taught in connection with safety education activities

## Health Education in Nature Study

## 1. OUTLINE OF TOPICS

<i>Aims</i>	<i>Activities</i>	<i>Nature Study Material</i>	<i>Correlation</i>
To demonstrate the needs of a healthy growing mammal.	Care of dog, cat, rabbit, guinea pig, lamb, calf, pig.	Furry animals. See project: Rearing of puppy.	In addition to correlations with language for every topic: Social studies.
To demonstrate the health needs of birds and show in what way they are similar to ours.	Care for canary, chickens, or ring doves.	Bird Study: Note: Keep doves in room during breeding season that children may become acquainted with reproductive processes of birds.	
To encourage children to dress properly according to weather.	Keep weather records. Dress doll appropriately for outdoor play.	Study of wind, rain, snow, clouds, etc.	Geography.
To show proper growing conditions for plants.	Rear seedlings under various conditions. Rear bulbs; potted plants.	Plant Study: See project: Growing of paper white narcissus bulbs.	Hygiene text.
To encourage eating of vegetables. For statement of Health Aims for Age-groups see pp. 90-94.	Make garden.	Study of vegetables.	Social studies, geography.

## ILLUSTRATION OF TOPIC DEVELOPMENT

*Project: Rearing of Puppy*

## AIMS

1. To illustrate the factors in the proper care of a puppy.
2. To develop sense of responsibility in the child by having him care for something which is dependent upon him.

*Problems**Related Experiences of Child*

1. What does puppy weigh?
2. What does puppy eat?  
Demonstration: Give milk, hard bread, or dog biscuits, cereal, bone and little cooked meat when dog is mature.
3. How does puppy eat?  
Observation: Different kinds of teeth. How does the dog use each kind?
4. Should the puppy be fed at regular times?  
Experience. Have a regular feeding hour.
5. Does the puppy take any exercise?  
Experience: given place to play, what does he do? What are the results of his exercise? Where would he rather play, indoors or outdoors?
6. What does the puppy do when tired?  
Experience: See how much time is spent in sleeping.
7. Is the puppy able to keep himself clean enough to be a proper and pleasant companion?  
Experience: Give puppy bath when he needs it.
8. How may the puppy's coat be improved in appearance?  
Experience: Brush him until smooth and glossy.
9. Has puppy grown any?  
Experience: Weigh the puppy weekly—keep a chart showing his growth and his habits in some correlated form.

Eating cereal, hard bread, milk, etc.

How should children eat?

Regularity of eating hour a necessity.

Vigorous exercise out of doors.

Plenty of sleep for child.

Frequent bathing.

Frequent and careful brushing of hair.

Monthly weighing of child and correlation of weight chart with child's own health practices.

*Project: Rearing of Paper White Narcissus Bulb*

## AIM (HEALTH)

To illustrate the necessity of food and water, air and sunshine for growth.

## APPROACH

Read story of "Dutch Twins," and work out a bit of Holland in the school-room.

## PLAN A CHRISTMAS GIFT OF BLOSSOMING BULBS

Other bulbs, or potted plants and seedlings can be used to develop these same ideas.

Problem: What are the best growing conditions for the bulb?

1. What is a bulb?

Experiment: Cut a bulb open to see what is inside. Find small plant, and layers of material around it.

(Ask pupils of intermediate grades to test layers for starch or plant food.)

2. Will the little plant grow without food?

Experiment: Carefully strip layers from sprouting bulbs, and place in water with pebbles.

Result.

3. Will they grow without water?

Experiment: Give best of growing conditions all except water.

Result.

4. Does the plant need sunshine?

Experiment: Put one in sunshine, another in absolutely dark closet. Compare.

5. Does the plant need air?

Experiment: Raise bulb in airtight Mason jar. Result.

Child Parallel.

1. Storage of food in home.

2. Child's need of food.

3. Child's need of water.

4. Need of outdoor play.

5. Need of outdoor air.

## B. SUGGESTIONS FOR COURSES OF STUDY IN HEALTH EDUCATION, GRADES 4, 5, AND 6

As in the earlier grades, the health education program should still emphasize the health habits. There should in addition be increasing emphasis on study of community health.

It will be a help to the teacher to construct a scale of health behavior similar to that for the earlier grades. The chief difference would be that the pupils may be held more completely responsible for their own health behavior, so that more items could be included.

However, in selecting the few habits to be regularly recorded, the teacher should study carefully the needs of her own classes. A discussion of the method to be used in selecting habits is given in "Methods of Health Instruction in the Elementary School," by Carolyn Hoefler, published by the Elizabeth McCormick Memorial Fund, Chicago.

### Suggestions for Teaching Nutrition

Important topics for discussion with suggested directing questions are as follows:

1. Food builds the body:  
Certain foods are specially useful in building muscles.  
Certain foods are specially useful in building bones and teeth.  
Certain foods are specially useful in building blood.  
Would you like to learn why we need different kinds of foods?  
Which contribute most to muscle? To bones and teeth? To blood?
2. Food is fuel for the body machine.  
How much gasoline does it take to run an automobile?  
How much food to run a boy or girl?
3. Certain foods keep the body in running order.  
What foods help the body to use all the other foods? (Vitamins.)  
What foods are body cleansers?  
What foods for each of these purposes did you have?  
Make a list of groceries and other foods coming into the home for one week.  
What foods give exercise to the teeth?
4. Different classes of foods supply different materials to the body:  
Cereals: Fuel, protein, ash, if bran is used.  
Vegetable: Vitamins, ash, some supply fuel too; some also supply protein.  
Fruits: Protein, ash, vitamin, fuel.  
Meats: Protein, fuel.  
Fats and sugars: Fuel.  
Milk: Everything.
5. Foods serving the same purpose in the body do not have the same price.  
What is the cost per pound of different cereals? Different vegetables?  
Different fruits, etc.?  
What is the cost of milk as compared with all other types of food?



6. It is possible to select a good yet inexpensive diet.  
How would you do it? (Involves studies of markets, in civics as discussed below.)
7. It is necessary to make food safe to eat.  
How is milk protected? (Cleanliness and Pasteurization.)  
How to protect vegetables and fruits? (By cooking or by cleansing it to be eaten raw.)  
Hands should be clean before touching foods.
8. Some food habits hinder growth. They are (1) irregularity of meals, (2) eating a badly assorted diet, (3) eating insufficient food on account of poor economy in selection, (4) drinking insufficient water.
9. Practical lessons should bring out clearly
  - (a) The food which should appear in the diet each day.
    1. Milk—at least one pint, preferably a quart.
    2. Two kinds of vegetables every day, preferably in addition to potatoes.
    3. At least one kind of fruit each day.
    4. A cereal for breakfast.
    5. Some hard bread to chew every day.
    6. A glass of water between each meal.
    7. Three meals according to a regular schedule.
  - (b) Suitable plans for breakfast, dinner and supper, nutritionally and economically.

#### ACTIVITIES IN WHICH NUTRITION LESSONS MAY BE TAUGHT CIVICS

In these grades the food work may well be connected with the study of civics.

A study of markets (both local markets, and markets of other communities) may show

- (a) The number of different kinds of vegetables available at certain seasons.
- (b) The cost of canned, fresh, dried and preserved vegetables.
- (c) Points under (a) and (b) in relation to fruits.
- (d) Factors in the cost of vegetables and fruits; transportation, perishability and scarcity.

A study of milk should include its distribution and care; the number of dairies in the community; how they are inspected; proper home care of milk.

Other profitable studies are a study of meat inspection, and of the protection of bread by bakery regulations. Points to be considered are the distribution and care of each product, number of meat markets (or bakeries), method of inspection, proper home care.

Such studies may include excursions to the dairies, bakeries, mills, markets, etc.

#### EXPERIMENTS

An interesting experiment for children of these grades is to separate milk into curd (protein), cream (fat) and whey, from which sugar can be crystallized and ash obtained. This experiment is to convey the idea that a food contains a variety of materials which may have different uses in the body.

#### MAKING CHARTS

Charts and posters may be more exact and scientific in these grades than earlier. Charts may be made showing energy values of food; groups of good meals, day's menus, etc.

## ARITHMETIC

Arithmetic lessons may include a simple study of the following kinds of problems in nutrition:

- Estimation of weight and height.
- Calories furnished in different foods.
- Calories furnished in different meals.
- Calories required in a whole day.

## Play Activities

Pupils should know how to play the games and sports listed in Chapter IV, Section F, Physical Education, and should develop along lines of meeting the following standards:

## GRADES 4, 5, 6

1. Should spend at least three hours daily in out-of-door active play.
2. Should be able to assume good posture upon request; should be willing to accept help in self-corrective exercises.
3. Should be interested in motor ability tests for running, jumping, throwing, batting and climbing, and ready to compete with other children.
4. Should enjoy vigorous folk dances.
5. Should be willing to play fairly.
6. Should have established "Rules of the Health Game" and should know the value of keeping them.

Any physiology taught in this connection should be very simple, and should be given only in response to a child's felt need for understanding more clearly the beneficial results of play activities, e.g., the fact that growing bones are more pliable than they will be later may help the child to appreciate more deeply the importance of good posture.

All children of these grades should understand:

1. That success in physical achievement is directly related to sleeping long hours with windows open, eating right foods at regular hours (see Nutrition Section), playing out of doors, being cheerful, controlling the temper, taking proper care of the feet, including wearing the right kind of shoes.
2. That play out-of-doors is better than going to movies.
3. That a short, happy evening at home is better than going to the movies as a regular thing.
4. That it is more valuable to sleep in the late hours than to listen to any radio program.

## Other Topics

The principles exemplified in the preceding paragraphs on nutrition and play activities should be applied in selecting the subject matter related to other topics. Pupils should be given the practical information needed for the efficient carrying out of health habits. For example, to be able to help in keeping rooms properly ventilated, they must know what is the most desirable temperature for a school-room (65 to 68 degrees F.). More technical or physiological information should be given only in response to the child's felt need for knowing "why," and should be, therefore, of a kind which meets this need, clarifying the child's problem and not confusing him by details which he cannot possibly understand. Nature study offers one of the best methods of teaching "why."

## Additional Activities in Which

## NATURE STUDY

*Aims*

To show essential life processes, through study of plant.

To furnish vegetables of particular food value.

To learn to avoid poisonous plants as the occasion arises.

To determine presence of bacteria in air and dust and show results of careless handling of food. To teach proper methods of handling. To show how the food value of fruits and grains is decreased by fermentation.

To show relation between certain insects and human health. To teach coöperation with local public health authorities.

To show that animals that live in filthy places are a menace to public health.

To establish the laws for healthy living in animals and compare with those of children.

To illustrate necessity of oxygen content of air.

To give children some basis for judgment of their own water supply.

*Activities*

Rear plants.

Make school or home garden. Experiments to show:

Relation of sunlight to plant growth. Relation to plant growth of availability of plant food, in water; warmth of soil. Chemical composition of soil and chemical composition of plant growing therefrom.

Makes charts for identification. Learn remedies.

Grow molds on bread, and bacteria on agar or gelatin plates, under conditions favorable and unfavorable to organisms. Stress fact that these are organisms rather than relation to disease.

Raise flies through various stages of development. Take census of breeding places. Expose agar or gelatin plate and allow fly to walk across it.

Secure reports of Board of Health.

Properly house and care for pet.

Make feeding tests.

Secure information from, or visit experimental laboratories in hospital, College or High School, etc.

Burn candle on float under a jar inverted in water.

Care of goldfish; aeriate water. Make balanced aquarium. Make ventilation experiments in room.

Visit local water supply. If rural, map sources of pollution: barns, factories, outhouses, sewage drains, etc.

Purify water by

1. Allowing dirt to settle.
2. Boiling to kill germs.
3. Distillation.

## Health Lessons May Be Taught

## ACTIVITIES

*Nature Study Material*

Begonia, coleus, bulbs, lemon, orange, grapefruit seeds. See project: Rear flowers for Easter.

1. Study conditions necessary for a satisfactory garden.

2. Planning school garden (vegetables suggested by Junior High School Course in Home Economics).

3. Plotting ground.

4. Preparation of soil.

5. Planting garden.

6. Cultivation.

7. Harvesting and cooking vegetables.

Poison ivy, poison sumac.

Molds, yeasts, bacteria.

*Correlation*

All topics may be correlated with oral and written English, Geography.

Geography.

Domestic Science if given in these grades. Hygiene Text.

Hygiene Text. Safety Instruction.

Hygiene Texts.

Fly, mosquito, roach, flea. See project: Anti-Fly Campaign.

Correlate all with English, oral and written, Civics. Hygiene Texts.

Rats and mice.

Civics, mathematics through graphs and charts.

Dog, cat, rabbit.

Guinea pig, white rat.

Study composition of air.

Hygiene Text.

Dependence of living things upon oxygen.

Study ventilation.

Water as an aid to health. Water as a menace to health.

Geography; Civics, Mathematics through chart and graph making.

## PROJECT: REAR PLANT FOR EASTER FLOWER SALE

## AIM

To show that a plant has certain essential life processes.

## APPROACH

Visit greenhouse or florist shop.

Discuss horticulture as a business, and the science of producing flowers for winter and early spring. Plan flower sale for Easter.

## ACTIVITY

Care for growing plants.

*Plant**Health Education Opportunities*

## Problems:

1. What are the best growing conditions for plant?  
(See p. 116.)

2. What plant activities can be discovered?

- (a) Giving out, and taking in water.

## Experiments:

- (a) Weight of plant.
- (b) Water drops come from leaf when enclosed in air-tight vessel.
- (b) Giving off carbon dioxide.  
Experiment: Lime water test.
- (c) Plant food or growing material.  
Experiment: Iodine solution test. Discuss other food, as sugar; protein; ash; fibre in plant parts.
- (d) Movement of "sap."  
Experiment: Celery in red ink solution.
- (e) Provision for reproduction.  
Correlation with geography or arithmetic.

1. For individual?

2. What corresponding activities may be observed?

- (a) Giving out, and taking in water.

- (b) Giving off carbon dioxide.

- (c) Test for starch in potato, cornstarch flour. Other food essentials provided by vegetables and fruits.

- (d) Blood as food carrier to cells.

- (e) Continue to acquire a sex vocabulary with associations clean and scientific.

## PROJECT: ANTI-FLY CAMPAIGN

## AIM

To show the direct connection of the fly with the health of the community.

## APPROACH

Visit restaurants, meat markets, grocery stores, etc., to discover if they are desirable sources of food.

Discuss good or bad points in care or handling of food; point out presence or absence of flies.

Observe some uncovered garbage cans, where flies are feeding and breeding.

## ACTIVITIES

Raise flies through successive stages of development.

Take census of fly breeding places.

Allow fly to walk across agar plate and count bacteria colonies.

Make and use a fly trap.

Construct a screened food box. Make cost estimate for screening the home.



## PROBLEMS

1. What conditions encourage presence and production of flies.
  - (a) As to food?  
Observations: Where are maggots most often found?
  - (b) As to temperature?  
Experiment: Raise maggots in smoked ham, and see in what temperature they mature most quickly.
  - (c) As to light and air? Experiment in various conditions.
2. Have we fly-breeding places in our neighborhood? What can be done to improve conditions? What can each do at home? In manual training class? Plan reports of home progress in exterminating flies.
3. Is there any harm in their walking over our bread, meat, etc.?

## LANGUAGE ACTIVITIES

Making a magazine and a supplementary reader are interesting activities which may be successfully carried on in these grades. Miss Moriarty of P. S. 158, New York City, has described the simple and effective way in which her classes issued a health magazine.

"In my classroom we run a paper called 'The Health Edition.' All that is needed is some children and some drawing paper. This little paper comes out every month and is in great demand all over the building. It is a side line and the children do it at home and at extra periods when their work is finished. One boy is editor-in-chief. Other boys are assistants, and the rest of them are reporters, and I was appointed assistant editor, I must say much to my surprise. Sometimes the children bring in very good articles, but they cannot be published because they are not properly spelled or are badly punctuated. The reasons why they cannot be published are pointed out. Then the child will get out his dictionary from the bottom of his desk where it reposes most of the time, and he will get the brighter members of the class interested, and after a while the article comes back correct.

"In the formal work of an ordinary classroom much time is devoted to teaching the importance of punctuation. This can be taught in its health relationship. In dictation exercises, the teacher can ask the children, 'How many of you were in bed last night at eight o'clock? Were the windows open?' The period, the interrogation mark are entirely recognizable. Results will be obtained." (*Health Education and the Preparation of Teachers. Lake Mohonk Conference, 1922, pp. 76-77.*)

Supplementary reading material may be used very extensively and effectively. Stories still appeal, but there will be a large place for reading material of an interesting, informational type.

Dramatization and presentation of pageants should be used freely.

## CONSTRUCTION ACTIVITIES

Postermaking and chartmaking in these grades may well be carried on in relation to Health Club activities. It is more interesting to make posters, which will be used on the school bulletin board, in a safety education campaign for example, or in the school lunchroom, than merely to make a poster for no special reason.

Bulletin boards may be effectively used to help popularize any phase of health education, to give interesting information, or current health news, to carry on special campaigns. Only good work should be displayed, and overcrowding should be avoided. Each classroom may have its own bulletin board, and there may also be a general school bulletin.

Construction of certain kinds of playground apparatus may be undertaken in these grades. The following pieces may be made by children of these years: sand boxes, jumping pits, smooth sticks for stunts, bows and arrows for target practice and tournaments.

#### USE OF OTHER SUBJECTS

It is possible to incorporate more health teaching in arithmetic in these grades, particularly in the sixth, than in earlier years. Problems of weight and height, percentage of over and under weight, when taken up in connection with keeping the class records become very significant. Problems of family budget, in relation to grocery bills, cost of milk, meat, vegetables, etc., and food value of each may be used to teach arithmetic and incidentally practical household efficiency.

Industrial arts activities may include a great deal of information which the individual will find useful, particularly in relation to food, clothing and housing problems.

The use of civics has already been suggested.

#### SUGGESTED PROBLEMS

When the teaching of health is conducted by the project method, any single problem or project very frequently involves a variety of the activities usually carried on in different school "subjects." The following suggested problems are of this type:

1. To plan a healthful, efficient and beautiful city.
2. To plan model stores and market places.
3. To plan a model home.
4. To prevent colds in a class. One class undertook not to have any colds all winter. In connection with this problem, the pupils studied the causes of colds, such as wet feet, draughts, over-heated bodies and sudden chill, too much clothing, possibility of catching a cold from some one else, etc. A "no sneezing or coughing" campaign was carried on, and correct use of handkerchief emphasized. A monthly record was kept of the colds in the class, and an attempt made to find out the reason for failure to carry out the campaign against them. (Course of Study in Health Instruction, Detroit.)

#### HEALTH CLUBS

Health Clubs of various kinds have proved successful in these grades, particularly the sixth. Little Mother's Leagues, the Modern Health Crusade, Civic Clubs, Junior Safety Councils, are examples of types of organizations which may be used. Weighing and measuring, and keeping a record of health habits, are usually part of health club activities.

## C. SUGGESTIONS FOR COURSES OF STUDY IN HEALTH EDUCATION IN JUNIOR AND SENIOR HIGH SCHOOLS

In increasing measure through the junior and senior high schools, health teaching should emphasize (1) the social and community aspects of health, and (2) the scientific foundation for health habits so that by the time the pupil reaches maturity he may decide all health problems upon a rational basis.

It is still necessary to have the pupils check their own health behavior, to be sure that their ideals and information carry over into action.

### Suggestions for Teaching Nutrition in Junior High School

Important topics and suggested directing questions in study of nutrition are grouped mainly about the following problems.

- (a) Quantitative studies of the amounts of different foods to make a well-balanced diet.

1. Cereals.

How much of the food consumed in the U. S. is cereal?

How much of that in other countries?

What are the advantages and disadvantages of a high proportion of cereal food.

If we make a large part of our diet cereal for economy, which cereals must we emphasize to avoid a one-sided diet?

1. Legumes.

What place do legumes have in the diet of different nationalities?

Do these legumes differ in nutritive properties?

In what ways can legumes be advantageous in the diet?

3. Fruits and Vegetables.

What is the food consumption of potatoes in the U. S.?

What foods are often substituted for potatoes?

Are they really substitutes?

What is a good policy in regard to eating potatoes?

What advantages are there in different ways of cooking potatoes?

Similar studies of apples, tomatoes and other staple fruits and vegetables.

4. Meats, eggs, cheese, nuts.

Compare the meat consumption of the U. S., European countries, New Zealand.

What are the main reasons for the differences?

What is the present tendency as to meat consumption in the U. S.?

What contribution does meat make to the diet?

What should determine the amount of meat which a person eats daily?

How does cheese compare with meat in food value and cost? Similar questions for eggs and nuts.

5. Sugar and other sweets.

What is per capita consumption of sugar in the U. S.?

What is the soda fountain consumption of sugar?

What is the proper place of sweets in nutrition?

What is the proper attitude toward soda fountains and the like?

What is the place of ice cream as a domestic and commercial product? Its place in the diet? How safeguard its quality.

What is the value of milk chocolate as to cost and proper place in the diet?

What are the best types of confectionery from the standpoint of health and economy?

#### 6. Fats.

What is the process of manufacture and the source of various food fats? Their cost and relative nutritive value?

What is the consumption of fat by different nations and different social groups both as to kind and amount?

#### 7. Cost of food.

What does the food necessary to give you a nourishing diet for a year cost in money? In time, to prepare it? In "overhead" such as a place to eat it, dishes, linen, silver, etc.?

(b) Common digestive disturbances are: Constipation, skin eruptions, bad breath, stringy hair, sallow complexion, headaches.

What foods are laxative?

Under what conditions must you take laxative foods to get the best results?

What foods are specially likely to upset digestion and give rise to skin disturbances, etc., if used unwisely?

(c) The way food is eaten is important.

What other conditions besides kind of food are necessary for good digestion?

What will help you to masticate well?

How can you arrange your schedule not to play hard right after eating?

How can you keep from eating between meals?

### ACTIVITIES IN WHICH NUTRITION LESSONS MAY BE TAUGHT IN JUNIOR HIGH SCHOOL

#### NATURE STUDY

Nature study activities may include the following problems. (See also pp. 129-135.)

1. Storage parts of plants useful for food (seeds, roots, tubers).
2. Usefulness to man of green leaves and watery fruits.
3. Extraction and purification of sugar.
4. Extraction and preparation of food fats.
5. Origin of animal tissue from plant food.
6. Special provision for nourishment of the young (milk).
7. Rearing of animals on good and poor diets.

#### SOCIAL STUDIES

In such subjects as geography, history and civics, nutrition lessons may be taught in studies of the following kinds of topics:

1. Conditions which make one kind of food staple in a certain country, not in others.
2. Cost of food as related to perishability, scarcity, etc.
3. Changes in food customs with the development from primitive to civilized conditions.
4. Influence of science on choice of food.
5. Demand of consumer as a factor in kind of goods offered for sale. (The boys of Speyer School, New York City, accomplished the introduction of lettuce and peanut butter sandwiches in a little corner store by their demand.)



6. Making posters for stores to remind customers of what are good purchases (*e. g.*, a milk poster in a milk store increased sales 300 per cent).

7. Responsibilities of the community for its public eating places, such as restaurants, hotels, soda fountains and foods offered for sale; *e. g.*, milk, ice cream, bread.

### ARITHMETIC

Such nutrition problems as the following may be included in arithmetic.

1. Estimation of individual food requirements, quantitatively, making a schedule of the day's activity by minutes and calculating calories per pound per hour.

2. Calculation of proportions of different types of food found in individual diets.

### THE SCHOOL LUNCH

In connection with the school lunch, pupils may study,

1. What the school lunch should contain (milk, fruit or green vegetable, bread or cereal), and how to make a wise selection from school cafeteria.

2. What kinds of lunches may be brought from home.

3. What kinds of lunches may be purchased from various sources in the neighborhood.

4. What the relation of the school lunch is to the rest of the day's food?

### DRAWING AND POSTER MAKING

In teaching nutrition in drawing and poster making, effective use should be made of suitable slogans, particularly if these slogans are used in the lunch room. An example is, "Your stomach is not a cave, it is you!"

### Nutrition in Senior High Schools

Suggestions for teaching nutrition in senior high schools are not made in detail, but a list of important topics for discussion follows:

1. Study of markets as to sanitary conditions and as to the influence of the customer upon what is offered for sale.

2. Similar study of groceries, delicatessen and eating places.

3. Study of the local sanitary code as it affects food.

4. How to cooperate to improve any bad conditions discovered.

5. Study of milk, eggs, bread, etc., from producer to consumer to note changes made in food, factors in cost, etc.

6. Detailed records of day's food consumption by pupils and study of these to see whether they embody best knowledge of pupil in regard to food; considering the total calories; whether different food groups are well represented; and whether regular meals of suitable number including breakfast are eaten.

7. Systematic correlation of food record with general health record, weight, colds and other minor ills, etc.

8. Study of the school lunch, (a) kind of food which it should serve, (b) cost of this food, (c) amount of service necessary, (d) what part of the diet it should contribute.

In studying markets, groceries or any similar places, especially when the study includes an excursion for purposes of inspection, it is recommended that the pupils make out a questionnaire before they go, which covers the most important points to be inspected. This would involve a careful study to make the



questionnaire intelligently, and would make the excursion much more valuable to the pupils.

### Play Activities in Junior High School

Pupils should know how to play the games and sports listed in Chapter IV, Section F, Physical Education, and should develop along lines of meeting the following standards:

#### GRADES 7, 8, 9—BOYS

1. Should spend at least two hours daily in out-of-door active play.
2. Should know when not in good posture and make self-correction; should ask for help in self-corrective exercises.
3. Should know standards of attainment in motor ability tests, know his own status and have ambition to be equal or excel.
4. Should enjoy vigorous "character" dancing.
5. Should want to play fairly and should be able to lead and referee games.
6. Should live by the "Rules of the Health Game" and appreciate their value; should appreciate need for community hygiene, community recreation and all community welfare.

#### GRADES 7, 8 AND 9—GIRLS

1. Should spend at least two hours daily in out-of-door active play.
2. Should know when not in good posture and make self-correction; should ask for help in self-corrective exercises.
3. Should know standards of attainment in motor ability tests and have ambition to be equal or to excel if her weight does not over-balance her natural energy and strength.
4. Should enjoy all rhythmic expression.
5. Should want to play fairly and should be able to lead and referee games.
6. Should live by the "Rules of the Health Game" and appreciate their value; should appreciate need for community hygiene, community recreation and all community welfare.

### Play Activities in Senior High School

Pupils should know how to play the games and sports listed in Chapter IV, Section F, Physical Education, and should develop along lines of meeting the following standards:

#### GRADES 10, 11 AND 12—BOYS

1. Should spend at least 1½ hours daily in out-of-door active play.
2. Should understand the value of good posture and hold it habitually; should be able to take self-corrective exercises with small amount of stimulus or guidance.
3. Should keep himself up to a desirable standard of all-round physical ability and accomplishment and then specialize along his best ability if he so desires.
4. Should be interested in leadership among younger boys.
5. Should live by the "Rules of the Health Game" and appreciate their value; should appreciate need for community hygiene, community recreation and all community welfare activities.

#### GRADES 10, 11 AND 12—GIRLS

1. Should spend at least 1½ hours daily in out-of-door active play.
2. Should understand the value of good posture and hold it habitually; should be able to take self-corrective exercises with small amount of stimulus or guidance.

3. Should be more interested in group and social forms of out-of-door activities than in individual contesting and record-breaking events.
4. Should enjoy and originate rhythmic expression.
5. Should be interested in leadership among younger girls.
6. Should live by the "Rules of the Health Game" and appreciate their value; should appreciate need for community hygiene, community recreation and all community welfare.

### Activities in Which Health Lessons May Be Taught in Either Junior or Senior High Schools

There are many courses in the high school curriculum in which health lessons may be taught: (a) biological science, (b) social science, (c) general science, (d) home economics, (e) physical education, (f) literature, (g) arithmetic (in grades 7 and 8).

#### BIOLOGICAL SCIENCE

There are many reasons why a course of study in Nature Study or Biological Subjects should not be prescribed. Such outlines as are desirable have already been indicated in the Report on the Reorganization of Secondary Science.

In general, we might say that to give richness and content to health habit training, it is desirable that at completion of elementary school, children should have acquired through observation or experience in nature study:

- (a) Knowledge of fundamental life processes and the conditions in environment that favor them.
- (b) Knowledge of several life histories, and the inter-relations of animals and plants, such as the carbon cycle and the nitrogen cycle.
- (c) Knowledge of the existence of micro-organisms as living beings—as helpful, harmful and neutral in their relations to men.

We would expect Junior and Senior High Schools to give, in addition (1) a scientific and simple understanding of structure and physiology in relation to the above types of study, as well as (2) economic and social significance of knowledge obtained.

In both cases, we should expect the above knowledge and the experiences connected with obtaining this knowledge, to be provided consciously and deliberately by biology teaching from the point of view which will consolidate habits and attitudes concerning health.

The following is therefore not a course of study. It is a discussion referring to subject matter commonly found in courses called Biology, Botany, Zoology, General Science. The arrangement aims to suggest deliberate and definite use of certain topics to strengthen the Health Education program. The fact that the same topics may be treated later in specialized courses in Physiology, Bacteriology, Sanitation, or School Hygiene, does not lessen the importance of using this material again from the health aspect, when it occurs in the subjects first listed.

*Biological Subject Matter from Courses in Biology, Botany or Zoology*

*Opportunities for Health Education*

*Possible Health Activities*

# I

Studies of growing plants or animals to understand their life functions. Plant studies to be the foundation for the study of animal and human life processes.

(a) Study of plant needs for the healthy normal growth of the individual; as minerals, air, water, sunlight and how needs are met through vital processes, photosynthesis, respiration, assimilation, etc.

(b) Cells as the units of life.

(c) Study of animal processes. Compare with plants to show similarities, differences and adaptation.

1. The utilization of food by the animal; ingestion, absorption, circulation, assimilation.

Study of manufacture and composition of plant foods; of the food values of various plant parts, as leaf, root, stem, tuber, bulb, fruit, nuts, grains, juicy fruits; of their food relations to the plant and to man.

Lay foundation for future understanding of study of physiological processes.

Study of production and food value of animal products; meat, milk, butter, cheese, eggs, interrelation of plants and animals. Constituents and importance of balanced ration.

Make study of experimental work done on animals to show value of all food elements including vitamins in their proper relations.

Human utilization of food prepared by plants and animals.

Study of individual's height-weight graphs. Correlate with keeping of individual health habit score cards, using these to check up individual health practice with the knowledge obtained through classroom studies to the left. (For example of this see Oakland, Calif. Course of Study in Science, Grades 7, 8, 9.)

See nutrition suggestions for further work in food values and preparation.

In school gardens raise vegetables needed to give certain required food elements, as minerals, vitamins.

Investigation of adequacy of markets.

Investigate adequacy of home dietary; school lunch facilities.

Self-testing and developmental physical education activities and effects on physiological development correlated with knowledge gained in class.

*Biological Subject Matter from Courses in Biology, Botany or Zoology*

*Opportunities for Health Education*

*Possible Health Activities*

2. The nervous system—its anatomy and functioning, in frog—in higher animals.

1. Animal behavior studies.

2. Opportunity to show physiological basis of habit formation.

3. Study the nervous system in relation to body controls; circulation, respiration, secretions, temperature, digestion and posture. Effect of over exertion, fatigue, poor hygiene, alcohol, tobacco and opiates on nervous system.

List habits observed in selves and others. Decide which are useful; which are harmful. Study methods of establishing habits. Each decide upon habit he wishes to establish and try out method, keeping graphs of progress.

3. Fatigue, work, sleep and rest. Value of work to body. Relation of work to fatigue and fatigue poison. Time and amount of rest to be of greatest value. Sleep the perfect form of rest. Relation of fatigue, rest and sleep to health.

1. Study relation of wastes to fatigue. Look up fatigue poison experiments that have been made on animals. That have been made with people.

2. Measure fatigue by use of ergograph. (See Gregg, Hygiene by Experiment.)

Budget your own time in relation to facts learned. Live on this budget over a reasonable period, and note results.

3. Action of fatigue poison upon nerves, muscles, blood, heart.

Determine conditions under which sleep is most beneficial; ventilation, dark room, proper bed, bed clothing suitable to weather.

4. Study trend of modern times to shorten the work day. Is this justified from findings on fatigue?

4. Sense Organs.  
(a) Eye-structure and functions. Defects and how corrected.

Develop appreciation of proper lighting and danger of improper. Importance of consulting competent specialist for correction. Causes of eye strain and effects. First aid—foreign particles—eye hygiene.

Have eyes tested and glasses fitted if necessary. Arrange seating at school and lighting facilities at home in accordance with good standards.

(b) Ear-structure and functions. Include relation to eustachian tube.

Hygiene of Ear.

Have hearing tested and act on results in some constructive way.

*Biological Subject Matter from Courses in Biology, Botany or Zoology*

*Opportunities for Health Education*

*Possible Health Activities*

5. Skin. Its functions. Proper care in relation to functions of protection, heat regulation, sensory organ; excretion, and beauty.

To study effects of various types of bathing on skin functions; of cosmetics; to develop value of cleanliness to physical and social efficiency.

To study relation of types of clothing to efficiency of skin functioning.

1. Correlation with Home Economics through acquiring skill in (a) Laundering processes. (b) Choice and making of clothing.

2. Acquire technique in shampooing, manicuring.

3. Correlate with Physical Education. Use of showers or pool after exercise.

## II

Studies in reproduction.  
(a) Plant Studies.

1. Study of simple plants to get idea of asexual and sexual reproduction, and growth thereafter.

2. Seed plants: pollination, fertilization, development of embryo, germination and growth of seed.

(b) Animal life: Use frog, salamander, snail or hen's eggs to study embryonic development.

Moving picture studies to show development.

Discover that fertilization is necessary. In external fertilization little or no care is given to eggs or offspring. With internal fertilization greater care for egg and offspring.

Collect and carefully watch frog's eggs, noting divisions and changes. Continue to watch successive stages in development of young. Live frogs may be kept in laboratory during spring.

Rearing of animal families may become a health teaching of first importance, especially for the mental hygiene values, in development of sex knowledge.

(c) Dissection of mature male and female frog, pigeon or rabbit. Trace out systems of respiration, circulation, digestion, etc., as well as reproduction.

The entire series, plant, or animal or both, should result in provision of needed vocabulary and concepts for thinking sanely, directly and scientifically about sex and the origin of life. Make human applications during individual conferences between teacher and pupil, when opportunity is ripe.



<i>Biological Subject Matter from Courses in Biology, Botany or Zoology</i>	<i>Opportunities for Health Education</i>	<i>Possible Health Activities</i>
-----------------------------------------------------------------------------	-------------------------------------------	-----------------------------------

Appropriate to child's age, studies in sociology, history, literature and the arts should accompany biological studies in this field, to maintain normal viewpoint.

(d) Plant and animal improvement. Evolution, heredity and environment.

Theory of evolution. Importance of heredity and environment.

Results of evolution in improved plants and animals. How man has improved plants and animals by selection and breeding. The value of Mendel's Law in this work. Good or bad qualities may be inherited. Work by Burbank.

Through hybridizing experiments with flowers, note inheritance of qualities from both parents.

Study inheritance among human families.

Study graph of famous family histories.

The personal factor of will power.

Importance of wise choice in marriage.

With older pupils—relation between personal fitness and racial improvement may be developed.

### III

Relations of micro-organisms to personal and community hygiene.

(a) Relation to food supply. Conditions favorable and unfavorable to growth with application to their control.

Consider useful, harmful and neutral in relation to human infections.

(b) Relation to disease:

Children's diseases, common colds, typhoid, tuberculosis, small pox, malaria, hook worm, infected wounds.

Study of immunity; vaccination and serums, quarantine.

Action of bacteria, yeast and mold on food in home. Protection of foods. Preservatives, good and bad.

\* Make and use culture media in study of bacteria. Raise and study yeast and mold. Experiments with disinfectants and antiseptics.

1. Visit to Health Department to learn its functions and activities.

2. Development of public opinion as to standards and needs for good water supply; proper care in production and handling of milk; sewage and garbage disposal; food inspection (see score card used by Health Department of Akron, Ohio); public and individual responsibility for

Correlate with Home Economics through practice in "preserving food" for home use.

Find out and cooperate with all sanitary ordinances. Make surveys of home and neighborhood to locate unsanitary conditions, breeding places of flies and mosquitoes. Aid in clean-up campaigns.

*Biological Subject Matter from Courses in Biology, Botany or Zoology*

*Opportunities for Health Education*

*Possible Health Activities*

quarantine vaccination, reporting of communicable diseases, etc.

3. Studies of vital statistics and their meaning.

4. Study of life history of fly and mosquito can be carried on in laboratory. Experiments with methods of control.

5. Sanitation. History of Panama Canal. History of yellow fever control. Home care of sick—proper and improper ways to care for infections at home.

"Anti-cold" campaigns. Tabulate personal habits and home practices making for health based on class-room studies. Score self and home. Correct defects. Practice in simple first aid and home nursing activities to illustrate class principles to left.

Be vaccinated against smallpox.

(c) Use of immune varieties and individuals to breed varieties with high resistance.

Natural and acquired immunity in man.

Careers of distinguished workers in health field. Biographies of Darwin, Pasteur, Gorgas, Jenner, Lazear, Koch, Lister, Florence Nightingale.

NOTE 1—First aid subject matter is best introduced at appropriate places, as bandaging in connection with circulation study or study of micro-organisms; resuscitation, in connection with respiration, or circulation, etc.; antidotes, fractures, sprain, etc., in same way as appropriate.

NOTE 2—Drugs and beverages should be studied when foods and their physiological effects are considered.

This topic can be treated when physiology of nervous system is considered.

Develop appreciation of the work of the scientist in fields basic to health activities. Stress the fact that courage, self-denial, altruism and skill of the highest quality were exercised by each.

To arouse interest in safety procedures, accident prevention.

To develop skill in first aid.

Study pure food and drug laws. Collect medicine advertisements and labels from patent medicines. Determine which are true and which false as to claims. Consult druggists as to harm of ingredients noted.

Opportunity to develop an enlightened, discriminating attitude towards uses of "medicines" as contrasted with hygienic daily regime.

Work out lines of conduct by following which we can best realize the health advantages conferred upon us by the work of the scientist studied.

Practice in the first aid activity under discussion. Development of First Aid Station and organization of First Aid Corps in school to care for minor emergencies—older pupils for younger, etc.

Scouts—methods demonstrated.

NOTE 3—Much scientific subject matter fundamental to Health Education is contained in the courses given as General Science. Such material is drawn from fields of chemistry or physics, rather than Biology, strictly speaking, and is not given here. Such topics are ventilation, heating, lighting; chemical processes incident to cooking, to cleansing. For the use of a general science course as a vehicle of Health Education, see Oakland Public Schools outline for General Science, Grades 7-8-9, also High School Journal, Oakland Public Schools for articles on courses in Physiology, Chemistry, Physics for Senior High School, in which material for Health Education is well presented.

Where the heads of departments desire to accomplish Health Education as earnestly as to meet college entrance conditions, conferences, and cooperation will develop a common aim and secure the enthusiastic adoption by pupils of a program of study and activities integrating all the activities of school in the pupils' health interests.

### SOCIAL SCIENCE

In social science courses, a study of the local community should include a survey of the community health problems. In the junior high school such a survey could appropriately deal with problems of (a) the work of the city health department, e.g., milk supply, water supply, sewage disposal, street cleaning and garbage disposal, protection against dangerous insects (flies, mosquitos), protection of the health of babies, little children and school children; (b) the kinds of houses people live in; (c) accident prevention and control; (d) other factors that affect the health of the community, such as industries in which people are engaged, habits of sobriety of the community.

In their historical aspects, the social studies may teach health lessons in connection with such topics as the following:

1. Study of private and public life of Greeks and Romans, emphasizing Greek ideal of manly strength and beauty, their Olympic games, including Pentathlon and Decathlon, and simplicity of early Roman life, etc.
2. Study of health conditions of Middle Ages in contrast with those of today.
3. Study of influences that molded early community life in America; living conditions of Pilgrim homes.
4. Study in differences in diet and habits of living in different countries.

### HOME ECONOMICS

In home economics courses, one of the major objectives should be to enable the students to feed, clothe and house themselves, and later their families, healthfully.

However, when health lessons are taught chiefly in home economics courses, the tendency is to give the boys no health teaching. This is extremely unfortunate and must be avoided.

### APPLIED SCIENCE

Applied science courses afford natural opportunities for teaching high school boys many of the things which are necessary for them to know in maintaining their own health, and that of their homes. In the Home Economics Circular No. 16, November, 1922, published by the Bureau of Education at Washington there are outlined suggested units for an applied science course for high school boys.

Such a course may include such studies as the following: (1) Elementary nutrition and camp cookery, in which are brought out the

important points about food given in the nutrition outline, (2) how to make camp fires, how to use a kitchen range, how to keep utensils clean in camp and at home, (3) important items in the choice of clothing, both for health and economy, (4) the care of clothing (removing spots, pressing, etc.), (5) selection of shoes, (6) study of heating and ventilating, both from point of view of health and of economy, (7) sanitary and plumbing devices, and care of plumbing (e.g., in common household emergencies such as frozen pipes, leaking faucets, (8) first aid work, (9) study of cost of living, taking up budgeting of average income of U. S. citizens of different occupations and budgeting the personal share of a high school boy.

### PHYSICAL EDUCATION

In physical education, the desire to be fit for participation in sports is found to be one of the strongest motives for the observance of health rules.

### ENGLISH

English courses offer the following opportunities for health education:

- (a) Debates, upon such topics as

"Resolved, that the fly is more dangerous than the mosquito in state, city or country."

"Resolved, that our city should furnish one-half pint of milk a day at morning recess to every child."

- (b) Biography readings, especially those of Roosevelt, Stevenson, Pasteur, Koch, Reed, Lister, Florence Nightingale, Frances Willard, Benjamin Rush.

(c) Reading of the history of great achievements in health; discovery of smallpox and typhoid vaccination, protection of Panama Canal Zone, discovery of causes of malaria and yellow fever and achievements in eradicating them, especially in Cuba and Central and South America, discovery of anesthetics, Pasteur's discoveries in bacteriology.

(d) Compositions upon health subjects. These are especially valuable if prepared in connection with a health section of the school paper.

(e) Dramatization, particularly of original plays worked out by the students themselves.

### ARITHMETIC

In the seventh and eighth grades, much of the problem material in arithmetic may well be drawn from the health field. Two examples are given here:

(a) "Why is the modern schoolroom for 40 pupils 30 feet long, 25 feet wide, and 13 feet high?" This problem involves the questions (1) what is the proper air space for each pupil and (2) what is the proper floor space per pupil?

(b) In a city of 180,000 there were on an average 450 cases of typhoid each year when unfiltered water was used. After filtered water was used, the cases were reduced to 85 a year.

"1. What was the per cent of decrease?

"2. How many lives were saved yearly as a result of filtering the water?" (E. George Payne: *Education in Health*.)

### HOME NURSING, CARE OF THE SICK AND FIRST AID

The health education program in senior high schools should include instruction in home nursing, care of the sick and first aid.



The following topics may be appropriately included in instruction in home nursing: (1) Choice and care of the bedroom, its temperature, lighting, ventilation, location, arrangement of furniture; (2) kind of bed and bedding to be used, making the bed, use of pillows; (3) care of the patient, care of hair, mouth, teeth, bathing the patient, use of bed pans, suitable clothing for the patient; (4) how to aid the physician in carrying out directions for giving medicines, taking temperature, giving enemata, etc.; (5) how to recognize suspicious signs of illness, at the appearance of which a physician should be called; precautions to be taken when these signs appear; (6) how to avoid spreading infection when caring for a patient with communicable disease; (7) preparation and serving of the sick person's meals.

The following topics may be appropriately included in instruction in first aid: (1) treatment of shock, (2) how to make and apply the various kinds of bandages, (3) treatment for injuries in which the skin is not broken, i.e., bruises, strains, sprains, dislocations, fractures, (4) treatment of injuries in which the skin is pierced or broken, (5) treatment of bleeding, (6) treatment of injuries due to heat or cold, i.e., burns and scalds, sunstroke and heat exhaustion, frost bite and freezing, (7) first aid in use of suffocation; or drowning; methods of inducing artificial respiration; treatment for electric shock, for gas poisoning, (8) treatment of unconsciousness, (9) remedies for common minor emergencies, such as hiccough, poison ivy, mosquito bites; (10) treatment in case of swallowing poison.

### CLUBS AND ORGANIZATIONS

Health organizations in high schools have been worked out in various ways, as Student Boards of Health and Health Leagues. In one high school, where clubs and organizations were already too numerous, it was decided that the vice-presidents of the classes (Freshman, Sophomore, etc.) should constitute the Student Board of Health.

The Board appointed three committees, one each on (a) Safety, (b) Sanitation, and (c) Publicity and Research. The duties of the committees were as follows:

(a) "The Safety Committee, with the Vice-President as chairman, shall promote all safety measures of the school. It shall take necessary precautions to make all phases of school life free from possible injury or accident.

(b) "The Sanitation Committee shall supervise all sanitary conditions in the school and investigate and report on the cleanliness of washroom, toilets, halls, and streets adjacent to the school.

(c) "The Publicity and Research Committee shall, when necessary, conduct General Health Campaigns in the school; it shall have charge of posting all health material and shall have published in the school paper and otherwise the work of the club. It shall also prepare and present new topics of discussion at each meeting of the Board." (A High School Board of Health, Latimer Jr. H. S., Pittsburgh.)

Titles of some of the Health Letters published by this Board of Health were "Weight and Health," "Winter Hygiene," "S. U. S." (Stand Up Straight), "Safety and First Aid Hints," and "Are you a Good Eater?"



Classroom work may also be conducted effectively when the class is organized as a health club and follows parliamentary procedure. This is a particularly valuable device if the health education work must be given as a hygiene course, not in relation to any other courses.

Health Clubs have been organized in Hunterdon County, New Jersey, over a period of years, with many favorable results. Actual records show the following changes. The complete list is not given, but the examples selected are representative of what may be accomplished through health clubs.

### Results of Health Club Work

	Before Health Club	1917-18	1922-23
Sleeping with open windows.....	55%	90%	97%
Brushing teeth twice a day.....	25%	75%	83%
Washing face, hands, neck, ears.....	67%	94%	90%
Doing without tea and coffee.....	33%	76%	84%
Using individual towels.....	....	44%	66%
Using individual drinking cup.....	40%	85%	80%

The number of members reporting in 1917-18 was 1,750 and in 1922-23 was 6,000.

In the William Penn High School, Philadelphia, each member of the club kept habit records, and at the end of the month, from the information gained from these records, made the following graphs; (a) Am I hygienically normal or above or below normal? (b) Which of my daily habits needs changing? (c) Is my class hygienically normal, or below or above normal? (d) What are the main physical defects in my class? (Suggestions for a Program of Health Teaching in the High School, Health Education, No. 15, U. S. Bureau of Education).

The activities of Boy Scouts, Girl Scouts, Campfire Girls, etc., naturally include a great deal of health education, and there should be close co-operation between the club leaders, and teachers of health education, in carrying out a program of high school health teaching.

### CAMPAIGNS OR "DRIVES"

"Health Weeks," "Safety Weeks," "Clean-Up Weeks," etc., may be used effectively in high schools to impress health lessons, especially if carried on at the time of a community campaign, when newspapers are interested in giving publicity to such activities. Such special "drives" should be followed sometimes later by study, survey, or "follow-up campaign," to discover the results of the first drive, and to help in making them permanent.

A "Health Week" in the Washington Irving High School, New York City, is described fully in "Suggestions for a Program for Health Teaching in the High School," Health Education, No. 15, U. S. Bureau of Education.

## CONSTRUCTION ACTIVITIES

Pupils in these years should be able to make in their shop work, such apparatus as jumping standards, bars, hurdles, tennis courts, and other courts requiring ground surfacing.

The co-operation of the art department in making posters and charts is always useful, but especially so in planning a "drive" or an exhibit.

## STUDY OF INDUSTRIAL HYGIENE

Industrial hygiene is a phase which appeals to boys, particularly in senior high school.

"Workmen's compensation acts and employers' liability laws; types of safety devices on machines, etc., are interesting points of attack. The economic benefit which accrues to employers who install better ventilating and protective devices should be pointed out. Respect for human life and knowledge concerning the proper precautions to be taken (gas masks, frequent hand washing, etc.,) should be included." ("A Program for Health Teaching in High School," Department of Interior, Bureau of Education, Health Education, No. 15, page 8.) A study may also be made of the importance of sobriety in the prevention of accidents and the safe and successful management of machinery.

## D. SUGGESTIONS FOR HEALTH EDUCATION IN NORMAL SCHOOLS

NOTE—This section does not discuss training teachers for health education. It presents the course of study which is a desirable part of the education of any normal school student. Professional and technical courses in teacher training are discussed in Chapter VIII.

As normal school curricula are usually organized, health education may be a part of numerous courses:

1. Chemistry—especially organic, physiological or applied chemistry courses, particularly in study of nutrition.
2. Physics—especially applied courses; e. g., in study of ventilation, heating, etc.
3. Biology—including genetics and eugenics, nutrition—e. g., metabolism.
4. Bacteriology.
5. Physiology.
6. Psychology.
7. Sociology.
8. Home Economics—e. g., nutrition, cookery, clothing courses.
9. Child study courses—including child psychology, physiology, care and feeding, sociological aspects of child problems, etc.
10. Hygiene courses—personal and community, including nutrition.
11. Physical Education program.

There are many combinations and variations of these courses in which the same material is given, though under a different name.

The tendency to organize scientific courses in child study and care of children is one of the most promising movements in colleges from the health education point of view.

It is a common practice in colleges and normal schools to make "hygiene" a required Freshman course, for which, frequently, no credit is given and from which but little good results. Such futility is entirely unnecessary. The Freshman coming to normal school usually has pressing problems of housing, diet, hours of work, fatigue, nervousness, recreation, exercise, etc., for which he would welcome a solution. If the hygiene course were to be organized about the real problems of the students themselves its usefulness would be multiplied many times. This principle is being recognized in elementary and high schools; it is equally applicable to normal schools. Similarly, a study of public health problems may well originate in a study or survey of local conditions. Such a survey is often undertaken in sociology courses.

Recognizing this, the Ohio State University has worked out a unique plan of health education, which is meeting with marked success.

As a supplement to the lecture courses they carry out the following procedure: "Believing that the most effective work in health care and disease prevention instruction can be given at a time when the student is interested in his personal health and comfort (that is usually when he is sick!) every student who calls upon the university health service is given careful instruction and advice.

"Brief, up-to-the-minute advice and information on nearly every phase of health care has been prepared and printed in compact form on what are known as 'health cards.' Some of the subjects covered are: Avoiding colds, bathing, eye-strain, constipation, eating and foods, sleep and rest, fresh air and ventilation, care of the teeth, value of deep breathing, effects of sedentary habits, stretch your neck (corrective posture card), care of the feet. Twenty-one cards form the series.

"From the opening of the university in the fall until early spring a constant health propaganda is conducted by monthly reports to the teaching force through the university Daily Bulletin and our health cards. The student is at all times impressed with the importance of treatment of trivial ailments, both from the standpoint of the individual student and from that of a student community.

"When the student appears in this department for advice or treatment, he is required to fill certain blanks. He is then ushered into the treatment room and his case is diagnosed and treated. He is then given personal advice concerning care of himself and protection of those in contact with him during his sickness and is presented with an appropriate health card showing how to prevent recurrence. In this way we reach the student at the psychological moment, and the impression made is a powerful and lasting one, for he has received his advice and instruction, in printed form that cannot be mistaken at a time when he is deeply interested in the outcome of his ailment. The growing interest in health care is shown in the following statistics:

	1918-18	1920-21	1922-23
Calls for advice only .....	135	446	1,162

"There is no doubt that this decided growth of interest is due to the steady increase of appreciation on the part of the members of the university in health care and preventive measures which is built around our method of teaching this subject."

This is undoubtedly an effective way of teaching personal hygiene to College students, and may be used equally well in normal schools.

However, community hygiene, child welfare, social hygiene, could be given only sketchy attention in such a scheme. Furthermore, it is essential that the normal school student receive that scientific foundation for health education without which it is impossible for him to meet his own and his community health prob-

lems in the intelligent, rational way which the community has a right to expect.

A "Posture Drive" which was carried out in the University of Oregon is an excellent example of what may be accomplished by intensive methods in health education.

"The senior girls in the School of Physical Education of the University of Oregon took up this year the question of posture as a project. They found that although many of the girls passed the posture tests in the gymnasium, most of them did not carry themselves well on the campus. They concluded, therefore, that the knowledge of what good posture is had been learned and could be produced when called for, but it 'meant nothing in their young lives.' So they decided to have a drive—to load the abstract notion with emotion—a thrill.

"On the principle that if you work for a thing you become interested in it, they enlisted as many different groups as possible. The school paper, run mostly by the men students of the University, served as advance agents with daily write-ups, some serious, some comic. The eye would light unexpectedly upon a phrase in black type such as: 'R U A Leaner,' 'Not what is your standing, but how are you standing?'

"The school paper gave publicity, the seniors majoring in physical education made posters, a posture tag-day created more interest, a shoe exhibit was conducted in which all the shoe merchants of the city had exhibits, lectures in the departments of psychology, education, art, anatomy, physiology, etc., discussed the value of good posture and a 'Posture Follies' program was presented at the end of the day." (Putting Punch into Posture. Florence D. Alden, Director of the Department of Physical Education for Women, University of Oregon.)



## E. SUGGESTIONS FOR OUTLINE OF TOPICS ON ALCOHOL AND OTHER NARCOTICS

The instruction concerning alcohol, tobacco, and other narcotics should be, in the main, a part of the general work in training to personal health habits and to promotion of community health and welfare. The keynote should be, "Teach by facts and illustration; not by exhortation."

Ideally, the instruction should be positive and demonstrative. Practically, the persistence of erroneous traditional beliefs about these substances, especially about alcohol, makes necessary concrete knowledge of their nature and effects, as reasons for practicing sobriety.

The choice of material, therefore, involves: (1) recognition of the individual and community advantages resulting from sobriety; (2) correction of current fallacies as to the nature and effects of these substances in which much of their use finds excuse; (3) definite knowledge of modern scientific experiments and observations on this subject; (4) the application of this information to practical conditions of modern life in meeting individual and community problems. The physiological lesson should be deftly interwoven with the concrete instruction.

Facts taught should be graded to meet the interest and psychological development of pupils. Motivation may be given through the appeal to desire for fitness for sports, efficiency in play and work, vigorous health, safety, service of others, obedience to the laws of character such as self-control, health, kindness, sportsmanship, self-reliance, duty, reliability, truth, good workmanship, co-operation, loyalty. Incidental training may be given in connection with or through arithmetic, language, history, geography, biography, English, drawing, projects. Much of this information will find its way through the children back into the home and if intelligently and constructively presented will often react on the home environment favorably to the child's physical, mental and moral development.

In this outline reference for positive ideals around which physical facts may be taught has been made to the viewpoints of "The Children's Morality Code" by Hutchins (and others).

### Ages Six to Eight

Good drinks for children: Water, milk, fresh fruit juices.

Drinks children should not use: Tea, coffee, soft drinks containing caffeine, such as coca cola; beer, wine.

Fruits and grains are good foods for children. Cider, wine, whisky which man makes from them, are harmful drinks.

Make use of simple facts taught by pictures and stories to small

children to make them understand that in these drinks good food material has been changed into a harmful substance. Use stories, pictures, songs, memory verses; make posters with simple drawings or cut-out pictures with accompanying legends representing positive ideals of abstinence or of using what is good, and will build up body, mind and character.

### Ages Nine to Eleven

Continue use of concrete illustrations either from the experience of individuals as in athletics, or from stories of experiments with masses of individuals in games, army marching tests, shooting tests, tests of rivalry in accomplishing physical work, experiences of explorers in hot and cold climates. Even some of the simpler laboratory experiments may be understood and their results illustrated by simple charts, posters or objects.

Use the appeal of hero admiration; sayings of athletic leaders and of men like Franklin, Lincoln, Edison, Peary, Gladstone, etc., about drink, advantages of sobriety, courage in choosing what will build up instead of what will tear down.

### SPORTS AND ATHLETICS

The Law of Sportsmanship—playing fair to win by strength, skill, courtesy.

Advantages of abstinence from all kinds of alcoholic drinks in sports: Actual experiences in football, baseball, walking, running, marching, climbing, swimming, target shooting. Alcohol by its effects on the body impairs strength, endurance (ability to hold out to the end), skill, causes mistakes or carelessness.

Disadvantages of tobacco using in athletics; training rules about smoking.

### SCHOLARSHIP

The Law of Good Workmanship. The Good American Tries to do the Right Thing in the Right Way and so as to get the best possible education to prepare for the time when grown up and at life work.

Observations of teachers as to the effects on scholarship and behavior of beer and wine drinking by children where this is permitted,\* teachers' experience in seeing good scholars become less good or poor as the results of using cigarettes.

### GROWTH

In connection with foods, the changes and waste of food materials entailed by fermentation in turning sugar and starch of good fruits and grain into alcohol which makes harmful drinks: the under-feeding of hungry people in the world which these foodstuffs would help relieve; experiences of the nations during the World War in saving food by reducing or stopping the manufacture of alcoholic

\* The object of this illustration is to help get the facts of the dangers of beer and wine to children from a true but remote situation, so that the instruction may seem impersonal. There are many children in American schools from homes of foreign born parents who are said still to drink beer and wine.

drinks. Healthful drinks from fruits and how to prevent fermentation (using at once or heating and sealing).

### HEALTH

The Law of Good Health. The Good American Tries to Gain and Keep Good Health, avoids habits which would harm him and others.

*Alcohol.* The harmful ingredients in fermented beer, wine, cider as well as in stronger drinks like whisky. Characteristic action to check or impair body activities; dulls user's ability to judge of its effects upon himself; deceives user into thinking it does him good when it is really making him less capable and fit. How alcohol impairs ability to resist many diseases (e.g., tuberculosis) and diminishes normal powers of resistance.

*Tobacco.* Dulling effect on ability to perceive need of fresh air and ventilation.

*Soothing Sirups.* Why they should not be given to babies.

### Ages Twelve to Fourteen

Continuing the heroic and efficiency points of view of the preceding period direct teaching toward thought of preparation for life efficiency. "The welfare of our country depends on those who have learned to do in the right way the things that ought to be done."

### GOOD WORKMANSHIP

"The Good American Tries to do the Right Thing in the Right Way"; gets the best possible education and does good work in preparation for life; no slipshod or careless work with mistakes or blunders which may cause hardship or disaster to self or others, or spoil success.

*Tobacco Handicaps:* (1) Effect on growth at age when strength and vigor are needed for development instead of diverting bodily processes needlessly for repairing physical or mental injuries likely to be caused by tobacco; (2) Drug effect tends to require increasing use, to tie one up to it, to make it difficult to get along without it; (3) Inconvenience; habit may cause needless discomfort and therefore inefficiency when for any reason tobacco cannot be obtained or is forbidden on account of health; (4) Needless expense at an age when most young people feel they do not have all the money they would like to spend and should be saving and planning for more education or a fund to start in business; (5) Effects on skill (experiments with baseball throwing, and target practice, etc.).

### HABIT-FORMING DRUGS

The Law of Reliability: The Good American is Reliable.

Do not excite curiosity about habit-forming drugs but give information that there are these drugs sometimes used by unfortunate people who have been quickly enslaved by them. The slavery because of the effect on body cells sometimes is so great that the user breaks every rule of reliability to get the drug, i.e., honesty, carefulness with

money, keeping promises, truth. Warn against accepting pills, powders, candy, or drinks from strangers or new acquaintances unknown to parents.

### ALCOHOL HANDICAPS

Changes from a century ago in methods of transportation (railroads, steamboats, motor vehicles, airships) and in production from handwork to machinery, require clear brains and steady nerves. Why American railroad engineers voluntarily become abstainers; why railroads require abstinence on the part of train operatives. (Effects of alcohol on alertness, perception, judgment, ability to see, interpret and respond to signals or signs of danger; simple accounts of experiments proving that these effects increase susceptibility to infectious diseases and such poisons as lead.)

Abstinence as an advantage to the worker; stories of tests showing that alcohol compels a greater expenditure of energy in doing a given piece of work ("makes hard work harder"), fatigue appears sooner. Why good food and hot or nourishing drinks are better than beer for the tired worker. Effects of alcohol on resistance to heat and cold; what better means than using alcoholic drinks for meeting exposure to extremes of temperature.

*Safety:* Why alcohol makes the drinker more liable to accidents (in factories, mills, motor vehicles); clumsiness in handling delicate or high-powered machinery; less alert to perceive or detect danger, less quick and accurate in deciding how to meet it; more reckless in taking chances; longer in recovering from injuries. Risks to sober workmen from drinking fellow workers. The danger of injury to work of brain and nerve cells during the several hours that the blood carries the alcohol to the cells before the body disposes of it entirely.

*Self-Control and Kindness:* The Good American Controls Himself, Herself in speech, temper, thought, actions; is "kind." How the depressant action of alcohol on brain and nerve cells works out to impair self-control, often leading to immoderate and destructive use of these substances, causing impatience or irritability, offences against good order, sometimes cruelty and violence by those who without alcohol are naturally kind and considerate.

*Health.* The better average health and longer life of abstainers than even moderate drinkers. Better average health of babies in non-drinking homes where money is spent for good food, home, care of baby and mother instead of for drink.

### Ages Fourteen to Eighteen

For the individual emphasizes the point of view of the Laws of Truth and Self-Reliance, open-mindedness to new truth, fearlessly choosing to govern life by it, helping others to understand it; for the social point of view, the Laws of Teamwork and Loyalty; friendly co-operation with others for the welfare of everybody.

*Tobacco:* Studies of experiments and observations on effects of smoking on athletic success and scholarship of college students. Ad-



vantages of abstinence from smoking until at least 21 years of age physically, mentally, morally (development of moral fibre in sticking to wise choices without fear of being laughed at).

*Narcotic Drugs:* Viewpoint: Observance of Laws of Health and of Self-Control in order to become useful citizens worthy of their country.

The story of China's effort to free itself from opium; why necessary; trade forced back upon her by selfishness of other nations; laws of the United States against traffic in these drugs; why necessary. Physical effects quickly fasten the habit on users. Young men and women of this generation can end dangers of the injury to America by choosing to let these drugs absolutely alone.

*Alcohol:* Industrial and business relations; advantages of entire sobriety to efficiency, reliability, responsibility, mutual understanding and good will; studies of the experiments demonstrating why and how alcohol tends to impair these qualities and self-judgment of user as to effects upon himself; the amounts of alcohol producing experimental results, equivalents in quantities of beer, wine or spirits. Drunkenness not the sole test of injury; is a late stage of the dulling or paralyzing effects on nerve cells normally exercising control or restraint. General stages of intoxication,\* (1) greater gaiety, volubility, or extravagance of speech; (2) slight clumsiness or inaccuracy in motion, slurring of speech, "don't care" feeling, sometimes leading to recklessness, lack of responsibility, unstable emotions; (3) unsteadiness and other familiar signs of drunkenness; (4) stupor, occasionally ending in death. Practical situations in industry, transportation, the home or social relations where stages earlier than drunkenness may lead to unfortunate results.

*Home and Social Relations:* How physical effects of working ability impaired by alcohol may result in diminished earning capacity or waste of money and work out into lower scale of living in the home as to food; housing, clothing, recreation, reacting unfavorably on health. Irritability caused by drink as a factor in unhappy home conditions reacting unfavorably on youth often leading to waywardness and delinquency. Relation of unbalancing control to unreasonable jealousy, hasty speech or acts leading to offenses against good taste or public order, even to crime. Personal responsibility, not only for avoiding alcoholic drink for oneself, but in refraining from offering it to others.

*Personal and Public Health:* Direct and indirect effects of alcohol in increasing special health problems like tuberculosis, infant mortality, child health, mental hygiene, social hygiene; experience of life insurance companies as to the more favorable life expectancy of abstainers as compared to that of (1) moderate drinkers even of beer or wine, (2) heavy drinkers; what it costs the home and community to rear one to manhood or womanhood, the smaller return of this

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\* From "Alcohol: Its Action on the Human Organism" by Medical Research Committee British Board of Control (Liquor Traffic) 1917.



cost made by the life prematurely shortened because of drink and habit-forming drugs. The losses from chronic alcoholism which occur in steady drinkers who seldom if ever get "drunk;" but who by frequent drinks have alcohol constantly circulating in the blood, impairing cells or tissues.

The Law of Loyalty and Helpfulness: Help students to understand the movement against alcohol and other narcotics as a part of the progressive health movement; to watch and sympathetically help its development in this and other countries in the spirit of loyalty to the welfare of all humanity.

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  - (c) The World's New Day and Alcohol. Same Publisher.
  - (d) Alcohol in Experience and Experiment. National Woman's Christian Temperance Union Publishing House. Evanston, Ill.
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## F. SUGGESTIONS FOR HIGH SCHOOLS AND NORMAL SCHOOLS IN REGARD TO SELF-MEDICATION

The material that follows properly belongs under the suggestions for a course of study in health education and is especially applicable to junior and senior high school students and to normal schools.

*Self-Medication:* Explain why the habit of indiscriminate self-drugging is harmful. Point out that the human body is an intricate mechanism and should be treated with consideration. Stress the fact that most of the remedies used today for self-medication are proprietary in character and comprise the so-called "patent medicines." Practically all products of this class are secret in composition so that the user is in ignorance of what he is taking. Many such preparations contain harmful and some of them habit-forming drugs. Many tonics contain alcohol. The greatest harm done by the "patent medicine" traffic lies in the advertising, the entire trend of which is to make one magnify trivial ills and to persuade well people that they are sick so that they will buy the products advertised.

*Laxatives:* The habit of using laxative drugs is one of the most widespread and pernicious features of self-drugging. While the use of such products on occasion may be justified, the tendency is to continue the use of laxatives instead of modifying the method of living so as to overcome the need of the drug. Continued use results in overstimulation of the intestinal tract so that Nature no longer functions normally but requires the whipping-up by the drug. Outdoor exercise, sufficient water with or between meals, a reasonable amount of roughage in food and the institution of regular hours for the performance of the bodily functions will make laxatives unnecessary except in rare instances.

*Remedies for Headache:* Headache is always a symptom and not a disease in itself. The preparations sold for the alleged cure of headache merely alleviate the symptoms. Most of the headache cures have for their chief ingredient acetanilid or acetphenetidins, drugs which depress the heart, disorganize the blood and create a habit. The excessive and indiscriminate use of acetylsalicylic acid (aspirin) is equally to be deplored. While not possessing to the same degree the dangerous qualities of acetanilid it may produce serious untoward effects in susceptible persons.

*Soothing Syrups:* The majority of the products sold to mothers for administration to infants as soothing syrups have morphin or some form of opium as their active ingredient. Products of this type have been responsible for the death of countless babies through the ignorance of mothers who gave their children the preparations.

*Remedies for Women's Ailments:* The majority of products of

this class contain some plant extractives of little or no therapeutic value and definite quantities of alcohol. The chief action of these preparations is that of the alcohol. They hold great danger to the adolescent girl and the adult woman.

*Remedies for Epilepsy:* Some form of bromide makes up the bulk of the preparations sold for the alleged cure of epilepsy, although there is coming on the market an increasing number of preparations containing phenobarbital (luminal) as the active ingredient. None of these remedies will cure epilepsy and the bromide mixtures in particular, when taken in ignorance of their composition and in doses much beyond the point of safety brutalize the sufferer and deaden his mentality.

*Remedies for Kidney Disease:* Kidney disease is a dangerous and insidious condition. It is not, as much of the advertising would lead one to believe, ushered in by pains in the lower part of the back. Generally speaking, kidney disease, except in its last stages, is painless. It is the height of unwisdom for a person who is really suffering from kidney disease to drug himself with preparations of whose composition he is ignorant and which frequently contain drugs that are irritant to the already inflamed kidney structure. No drug will cure kidney disease, although much may be done by the skilled physician to arrest the disease if it is taken in time.

*Remedies for Obesity:* Products of this sort have a wide vogue among those who overeat and underexercise. They may be roughly divided into two classes—those which contain thyroid extract and are dangerous and those which do not contain thyroid extract and are worthless. Preparations to be put in the bath or to be rubbed on the body under the claim that by so doing the obese may reduce themselves are fraudulent.

*Remedies for Deafness:* There is no drug or device known which will cure deafness and any drug or device which is advertised as a cure for deafness is to be viewed with suspicion. There are meritorious instruments on the market that will aid those who are hard of hearing. On the other hand, there are many worthless devices sold for the same purpose which may prove harmful to a degree.

*Remedies for Cancer and Consumption:* All preparations sold for the alleged cure of cancer and consumption are fraudulent. There is no drug known that will cure either. The sale of products of this type is a serious menace because by their use proper treatment in the early stages is delayed until the disease has progressed to a point where nothing can be done.

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## VII

### MEASUREMENT OF RESULTS IN HEALTH EDUCATION

The demand steadily increases for accurate and objective measurement of results in all phases of school work, not excepting health education.

Measurement of results in health education should be designed to answer for the teacher the following questions:

#### A. General Results

1. What health habits have been formed by each of her pupils? Are being formed? Still need to be formed?
2. What attitudes have been established? Still need to be established?
3. Of what knowledge do the pupils have useful command?
4. Has the health of her pupils shown improvement, e.g., as shown by decrease in absences due to illness.
5. Has there been any relationship between health improvement (or lack of it) and the results indicated in questions 1, 2, and 3?

#### B. Comparison of Methods

1. Which methods and materials are most effective in producing results in habit formation? Attitude formation? In informational learning?

There are, as yet, no standardized tests for measuring health habit formation, but a list is given here of the variety of methods now used.

1. Keeping daily records, score cards, etc., upon which health habit performance is regularly checked, throughout the year.
2. Keeping daily records for a short period of time, say a week, at the beginning and end of each term, with comparison of results.
3. Comparison of weight records, illness records, attendance records, and other objective evidences of the child's state of health, with his habit records, to serve as a partial check on his accuracy in reporting. It must be understood that such records are only a partial check on health habit performance. For example, a child may perform all health habits regularly, and still remain underweight if there is some underlying cause for the condition of malnutrition.
4. Observations and questions by the teacher in school—e.g., in the lunch room, on the playground, and during home visits.

5. Child's report at end of semester, regarding how he has improved; e.g., one class wrote letters at the end of a period of health education, in which they discussed the results. The reports were written as letters. Some of the items revealed by analysis of the letters are listed here.\*
  - "Ten children ate breakfast who had never eaten it before.
  - "Nineteen got more sleep.
  - "Twelve ate more leafy vegetables.
  - "Eight students who never did so before, now wash their hands before meals.
  - "Twenty-eight ate more fruit.
  - "Sixty-one brushed their teeth more regularly.
  - "Thirty-two stopped using coffee.
  - "Forty-six drank more milk.
  - "Eight tried to keep pencils out of their mouths, although many confessed that they didn't succeed very well.
  - "One drank more water."

Measurement of attitudes is still an unsolved problem. The only tangible index of attitude is the behavior of the child. Does the child have an attitude of responsibility for the cleanliness of the school grounds? To answer this question observe his behavior on the playground.

Measurement of knowledge in health education may be accomplished by the same methods used in other subjects. Tests should be constructed in accordance with the best educational practice.

In judging the results of the tests of knowledge, the teacher should study the relationship between the pupil's habit record and his "knowledge" record.

The record of days lost because of illness, in proportion to the total days of school attendance, is one valuable index, although a crude one, of the effectiveness of health education. Improvement in the health of school children, or lack of improvement, is a result of many other factors than health education, i.e., home environment, sanitary condition of the city (drinking water, housing, milk supply, sewage disposal, etc). For this reason, decrease or increase in absences due to illness cannot be ascribed solely to health education programs. Although useful, such records are not satisfactory as the sole measure of the success of health education. The results of health education should be measured in terms of educational outcomes, as well as immediate health outcomes.

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\* "Health Education and the Preparation of Teachers": Report of the Lake Mohonk Conference, 1922. Report of a project in Junior School No. 2, Trenton, N. J.



## VIII

### PREPARATION OF TEACHERS

The most vital and urgent problem in carrying out a program of health education is the training of teachers. Inasmuch as a program of health education should be carried out not by a few specialists, but by regular classroom teachers, it becomes a problem which deals with the training of all elementary school teachers, and to varying degrees, the training of all high school teachers.

Preparation for health teaching requires study of many topics, but they may be grouped into a few large groups of courses. The following program was suggested at the International Health Education Conference in 1923. (Paper read by Dr. Edna Bailey, supervisor of the Teaching of Science, University High School, Oakland, California.)

"1. General scientific foundation:

Chemistry (including organic) and physics.

Biology—general and human.

Bacteriology (including immunology).

Psychology—General and educational.

"2. Specific technical information and training:

Study of preventive public health activities, including prevention of communicable and degenerative diseases, sanitation and housing, industrial risks, child welfare, effect of alcoholic drinks and other narcotics, vital statistics, governmental and other health agencies.

Nutrition (see Ch. IV, Section C, Nutrition and Health).

Physiology of infancy and childhood.

Psychology of childhood and adolescence.

Physical education.

"3. Practical training in health teaching."

This program has certain outstanding characteristics: "Greater emphasis (than usual) is placed on the fundamental sciences, and at least one year of work in each beyond the high school.

"A few large units of instruction are provided in order to do away with multiplicity of courses, and consequent confusion and overlapping.

"No 'rule of thumb' courses usually described as 'hygiene' of one sort or another, are included, and no courses for obtaining special skills, such as First Aid, and Home Care of the Sick. These involve no new subject matter and should be learned as practical phases of the fundamental subject-matter by applying it in home and school situations."

But, selection of subject matter is only part of the problem:

"We must also recognize that our teachers-in-training learn what to teach and how to teach it, by example, far better than by precept.

"Therefore, not only must we insist on sound scholarship in fundamental sciences, but we must strive for such practical teaching in those sciences as will bear fruit in action. All the training we can give prospective teachers on the fundamental sciences will be practically worthless, unless it has been presented in such a manner as to include the solution of practical problems, not as a means of applying what has been learned, but as the commanding motive for learning anything at all about science.

"We cannot lecture and quiz our students through normal school and college, and then expect them to go out and teach by the problem method. They will teach as they have been taught. We must break down the wall between schools and practical concerns, and learn even the fundamental sciences in relation to the world's need of them.

"This applies not only to the group of fundamental sciences, but also, and even more emphatically, to the specific and more technical material included in our second group. This may be successfully presented in problem fashion, beginning where the students are, and working from local to broader problems." (Report of Health Education Conference, American Child Health Association, 370 Seventh Avenue, N. Y., 1923, p. 272.)

The requisites in training of supervisors of health education have been summarized by Dr. Thomas D. Wood as follows:

"1. Broad cultural and general education with graduation at least from a teacher-training institution, and when possible, with the addition of graduate study in some university providing satisfactory professional training with advanced study in the field of Health Education.

"2. Experience in teaching health as a valuable background and preparation for supervision. If the supervisor in this field has been fortunate enough to teach other subjects than hygiene under competent criticism, this auxiliary teaching experience may prove of very great advantage.

"3. Thorough grounding in the fundamentals of:

- (a) General educational principles and methods.
- (b) Psychological and pedagogical principles and methods in special adaptation to the field of Health Education.
- (c) Natural, biological and social sciences, with as extensive knowledge as possible of sanitation, public health, hygiene, nutrition and allied subjects.
- (d) Skill in observing, criticising and acceptably guiding teachers under supervision; tact in combining successfully a minimum of adverse criticism with a maximum of constructive stimulation and help."

Beyond this he says, "Both teachers and supervisors of Health Education should be, in personal, social and professional conduct, whole-heartedly and mindedly devoted to the physical, mental and character health of children and youth. They should present a stimulating and healthful example for their students and fellow teachers in thinking, and in attitudes and conduct affecting health, personal

and social. By instruction and suggestions, they should be able to influence the students to participate constructively and progressively in a life of health, of helpfulness, and of the highest satisfaction." (Report of International Health Education Conference, American Child Health Association, 1923, p. 293.)

The preparation of teachers for health education, however, cannot be completely adequate unless it is carried on in an environment and under a regime which insures to every teacher as healthful and vigorous a life as possible while she is in training. Recognizing this, the conference on Health Education and Training of Teachers at Lake Mohonk in 1922, recommended that training schools should provide (a) a student health service, and (b) healthful surroundings, in addition to the content courses.

They recommend that the Student Health Service should include:

"(a) A complete health examination and such subsequent examinations as may be necessary.

"(b) Health advice and supervision of students throughout the course.

"(c) The correction of remediable health defects.

"(d) The maintenance of a healthful regimen of living; . . . 'Healthful living' shall be understood to include proper hours of sleep, proper food, clothing, bathing and exercise.

"(e) As far as practicable, the student's attitude and conduct in regard to the above points shall be a basis for recommendation for a professional position."

Regarding healthful surroundings, they recommended that "the administration of Teacher-Training Schools should make provision for supervision and control of the living and working conditions of students, whether the students live in dormitories or elsewhere." ("Health Education and the Preparation of Teachers," American Child Health Association, 1922, pp. 176-7.)

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2. Report of International Health Education Conference, 1923. American Child Health Association. New York.

## IX

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2. American Red Cross. Text Book on First Aid. American Red Cross. Washington, D. C.
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1. Andress, J. Mace, and Andress, Annie Turner. A Journey to Health Land. Ginn and Co. Boston. 1924. (For third or fourth grade.)
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6. Keep Well Stories for Little Folks. J. B. Lippincott Co.
7. Rosy Cheeks and Strong Heart. The Macmillan Co., New York.
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Supplementary reading material may also be obtained from many of the organizations listed under "Organizations."

#### ORGANIZATIONS FROM WHICH HEALTH EDUCATION MATERIAL MAY BE OBTAINED

1. American Child Health Association, 370 Seventh Avenue, New York City. Supplies the most complete variety of materials for health education; plays, readings, weight charts, and records, games, pamphlets for the teachers, etc. Send for list of publications.
2. Bureau of Education, Department of the Interior, Washington, D. C.

#### *Health Education Series*

Classroom Weight Record. Single copy, 5 cents; additional copies, 1 cent each.

No. 1. Wanted Teachers to Enlist for Health Service. Single copy, 5 cents; additional copies, 1 cent each.

No. 2. Diet for the School Child. Single copy, 5 cents; additional copies, 2 cents each.

No. 3. Summer Health and Play School. Single copy, 5 cents; additional copies, 2 cents each.

No. 4. Teaching Health. Single copy, 5 cents; additional copies, 2 cents each.

No. 5. Child Health Program for Parent-Teacher Associations and Women's Clubs. Single copy, 5 cents; additional copies, 3 cents each.

No. 6. Further Steps in Teaching Health. Single copy, 5 cents; additional copies, 3 cents each.

No. 7. The Lunch Hour at School. Single copy, 5 cents; additional copies, 4 cents each.

No. 8. Health Training for Teachers. Single copy, 5 cents; additional copies, 2 cents each.

No. 9. Your Opportunity in the Schools. Single copy, 5 cents; additional copies, 2 cents each.

No. 10. Suggestions for a Program for Health Teaching in the Elementary Schools. Single copy, 10 cents; additional copies, 6 cents each.

No. 11. Milk and Our School Children. Single copy, 5 cents; additional copies, 2 cents each.

No. 12. Sleep. Single copy, 5 cents; additional copies, 2 cents each.

No. 13. Dramatics for Health Teaching. Single copy, 5 cents; additional copies, 2 cents each.

No. 14. Health and the Kindergarten. Single copy, 5 cents; additional copies, 3 cents each.

No. 15. Suggestions for a Program of Health Teaching in the High School. Single copy, 5 cents; additional copies, 3 cents each.

No. 16. The Continuing need for Teachers of Child Health. Single copy, 5 cents; additional copies, 2 cents each.

#### *Posters*

No. 4. Weight-Height-Age Tables for Boys and Girls. Single copy, 5 cents; additional copies, 1 cent each.

No. 5. Sleep. Single copy, 5 cents; additional copies, 2 cents each.

#### *School Health Studies*

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No. 5. Health Promotion in a Continuation School. (Fall River, Mass.)

### 3. Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association.

1. Minimum Health Requirements for Rural Schools. 10 cents each; \$5.00 per hundred.

2. Health Essentials for Rural School Children. 15 cents each; \$8.00 per hundred.

3. The Illustrated Health Chart Report, showing miniature reproduction of all the charts, 25 cents each; \$15.00 per hundred.

4. Health Improvement in Rural Schools. 25 cents each; \$15.00 per hundred.

5. Health Service in City Schools. 25 cents each; \$15.00 per hundred.

6. The Teacher's Part in Social Hygiene.
7. Health Education. A Program for Public Schools and Teacher Training Institutions. \$1.00. Discounts on quantity orders.

Charts and Reports may be ordered by addressing the chairman, Dr. Thomas D. Wood, 525 West 120th St., New York City, or the National Education Association, 1201 16th St., N. W., Washington, D. C.

#### 4. National Tuberculosis Association.

370 Seventh Avenue, New York. Supplies for Modern Health Crusade, Health Plays, Posters, Charts, etc.; "Health Teaching in Schools, A Manual for Teachers," informational material. Write for list of publications.

### OTHER ORGANIZATIONS FROM WHICH INFORMATION, CHARTS, PAMPHLETS, SLIDES, ETC., MAY BE OBTAINED

1. American Medical Association, 535 N. Dearborn St., Chicago, Ill.
2. American Posture League, 1 Madison Ave., New York City. Lantern slides, reprints, traveling exhibits.
3. American Red Cross. Washington, D. C.
4. American Social Hygiene Association, 370 Seventh Ave., New York City.
5. Association for the Prevention and Relief of Heart Diseases, 370 Seventh Ave., New York City.
6. Boy Scouts of America, 200 Fifth Ave., New York City.
7. Camp Fire Girls, 527 Fifth Ave., New York City.
8. Children's Bureau, U. S. Dept. of Labor, Washington, D. C.
10. Elizabeth McCormick Memorial Fund, 848 North Dearborn St., Chicago, Ill.
11. Girl Scouts, 527 Fifth Ave., New York City.
12. Life Extension Institute, 25 West 45th St., New York City.
13. Metropolitan Life Insurance Company. New York City. Posters, charts, and booklets on health. Free.
14. Natural History Museum. New York City. Exhibits and slides.
15. National Child Welfare Association, 70 Fifth Ave., New York City. Send for booklet listing their charts, posters and other publications.
16. National Committee for Mental Hygiene, 370 Seventh Ave., New York City.
17. National Committee for the Prevention of Blindness, 130 East 22nd St., New York City.
18. National Dairy Council, 910 South Michigan Ave., Chicago, Ill. Send for pamphlets, "Educational Material" which lists all the materials available from this organization, posters, films, slides, booklets, leaflets, folder, health plays, etc.
19. National Health Council, 370 Seventh Ave., New York City.
20. National Organization for Public Health Nursing, 370 Seventh Ave., New York City.
21. National Congress of Mothers and Parent-Teachers' Associations, 1201 16th St. N. W., Washington, D. C.
22. National Safety Council, 168 North Michigan Ave., Chicago, Ill.
23. National Women's Christian Temperance Union, Evanston, Ill.
24. Office of Home Economics, U. S. Dept. of Agriculture, Washington, D. C.
25. Philadelphia Interstate Dairy Council, 1211-13 Arch St., Philadelphia, Pa. Health habits, suggestions for developing them in school children. Also posters, charts and various devices for encouraging health habit formation.
26. Playground and Recreation Association of America, 1 Madison Ave., New York City.
27. The Rockefeller Foundation, 61 Broadway, New York City.
28. The Russell Sage Foundation, New York City.
29. Scientific Temperance Federation. 73 Tremont St., Boston.
30. The Society for the Study and Control of Cancer, 370 Seventh Ave., New York City.

31. State Boards of Health.
32. State Tuberculosis Associations.
33. Superintendent of Documents. Washington, D. C. Price list of government publications on health.
34. United States Public Health Service. Washington, D. C.
35. United States Bureau of Education. Washington, D. C.
36. Women's Foundation for Health, 370 Seventh Ave., New York City.
37. Women's Press, 600 Lexington Ave., New York City. Posture and foot charts. 20 cents.

#### SOURCES FROM WHICH MOTION PICTURES FOR HEALTH EDUCATION MAY BE OBTAINED

1. American Motion Picture Service. (Distributed by Community Picture Company). 50 Church St., New York City.
2. The Bray Production, Inc., 130 West 46th St., New York City.
3. Community Motion Picture Company, 46 West 24th St., New York City.
4. Goldman-Carpenter Motion Picture Company. Flushing, Long Island.
5. Harry Levey Service Corp., 232 West 38th St., New York City.
6. National Non-Theatrical Motion Pictures, 232 West 38th St., New York City.
7. Queen Lecture Service, 30-31 Potter Bldg., Birmingham, Ala.
8. Rockefeller Foundation, 61 Broadway, New York.
9. Society for Visual Education, 220 West 42nd St., New York City, or 806 West Washington Blvd., Chicago.
10. State Boards of Health, State Agricultural Colleges and State Universities often distribute films.
11. Worcester Film Corporation, Park Bldg., Worcester, Mass.

#### MAGAZINES

1. American Child. National Child Labor Committee, 215 Fourth Ave., New York City.
2. American Journal of Nursing, 370 Seventh Ave., New York City.
3. American Journal of Public Health, 370 Seventh Ave., New York City.
4. American Physical Education Review. Springfield, Mass.
5. Child Health. The American Child Health Association, 370 Seventh Ave., New York City. Issued monthly. \$3.00 per year; 25 cents single copy.
6. The Crusader. Wisconsin Anti-Tuberculosis Association. Health Service Bldg., Milwaukee, Wis. Monthly except July and August. 50 cents a year; single copy 5 cents. As a supplement, publishes large sheet with calendar on one side and Health Reading Lesson (for primary grades) on other side.
7. Hygeia. The American Medical Association, 535 North Dearborn St., Chicago, Ill. Issued monthly. \$3.00 per year; 25 cents single copy.
8. Journal of the Outdoor Life, 370 Seventh Ave., New York City.
9. Library Index. National Health Library, 370 Seventh Ave., New York City. Issued weekly. Gives classified references to articles about health in many current magazines.
10. The Nation's Health, 20-24 East Ontario St., Chicago, Ill. Issued monthly. \$3.00 per year.
11. Nature Magazine. American Nature Association, 1214 16th St. N. W., Washington, D. C. \$2.50 per year.
12. Public Health Nurse, 370 Seventh Ave., New York City.
13. School Life. Bureau of Education, Dept. of Interior. Washington, D. C. 50 cents a year. Issued monthly except July and August. (Send subscription to Supt. of Documents, Govt. Printing Office, Washington, D. C.) Usually contains one or more articles on school health and health education.



## X

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